

# RADIO AMATEUR

FEBRUARY 1992

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Data Issue



THE WIA RADIO AMATEUR'S JOURNAL

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### Cover

The QTH of Hartmut 9X5HG near Kigali, Rwanda. Photo by courtesy of Stephen Pall VK2PS.

# EDITOR'S COMMENT

BILL RICE VK3ABP EXECUTIVE EDITOR

## Feedback

So far, I have received four written comments on my editorial last month (Lies, Damned Lies and ??). Two are from migrants (or at least visitors) which is itself an interesting statistic. The full quotation is "There are lies, damned lies, and then there are statistics". Colin N4SOI (giving a VK2 address) tells us who. Not Winston Churchill, but someone who occupied the same Prime Ministerial chair some 75 years earlier, Benjamin Disraeli. Thanks for the info, Colin!

The other migrant is VK4CGO (he didn't give his first name) who was a ZL and NZART member from about 1947 until moving to VK4 a few years ago. He and Owen VK2DMY were not happy with the theme that WIA member-

ship is becoming cheaper in terms of inflated dollars (measured by CPD). The VK4 disliked but could not alter the political and economic trends he observed in ZL and now sees in VK, realising that they are probably world-wide. In fact, the only country still booming seems to be Japan; and that is only because of ingenuity and productivity demonstrably better than the rest of the world.

Unfortunately, Owen was even more unhappy, and described my efforts as "ill-considered, epitomising the elitist, bureaucratic and self-righteous attitude of the Executive of the WIA". He suggested that my personal background did not "reflect the average Australian amateur". He preferred "more logical and commercial values when as-

sessing value for money". CPI is apparently not good enough. And, finally, he wanted to see more advertising in AR, thus reducing its cost to members.

Others may agree with Owen, so I have decided to comment here rather than in the limited space of a footnote in "Over to You". What is ill-considered in a statement of fact? Am I elitist because I have an indexed pension? We radio amateurs are one in every thousand of the population. Most of us have at least some background in electronics. Many of us (I guess between 30 and 50 percent) have tertiary qualifications. Collectively, are we not ourselves an elite?

What is a bureaucracy? Macquarie gives four definitions, which all add up to government by officials without responsibility. The WIA is not a government, but we do continuously negotiate with government bodies, which respond much more co-opera-

tively to a well-organised representative body. Yes, we are representative, and mostly without being paid for it. Personally, I give about 25 or 30 hours of my time every month, plus over 300km of travelling, to the WIA, without one cent of payment. I joined the WIA in 1945 and was first licensed in 1947. I have been on Executive since 1983. Am I a bureaucrat? If I am self-righteous, have I no good reason for it? I guess I am not "the average Australian amateur". Most would not be so altruistic. My position as Executive Editor is open to anyone who feels they can do better.

More advertising in AR would permit a larger magazine or subscriptions being kept lower. No argument! But in the present economic climate advertisers are struggling to stay in business. Advertising must reach more customers to pay for itself.

*Continued on page 16*

## Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

## Wireless Institute of Australia

The world's first and oldest National Radio Society — Founded 1910

Representing the Australian Amateur Radio Service — Member of the International Amateur Radio Union

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# WIA NEWS

FROM THE WIA EXECUTIVE OFFICE

## Spread Spectrum Transmissions

DoTC in Canberra recently advised the WIA they had received a request from one of their State offices for an interpretation of the requirements of RIB 71 para 39 with respect to spread spectrum transmissions.

Canberra advised the DoTC State office that spread spectrum transmissions are to be considered as wide band emissions and, as such, are governed by paragraph 39 of the RIB. This means that spread spectrum modulation

is only permitted above 420 MHz.

This interpretation is agreed to by the WIA.

## JOTA 1991

The report on the 34th Jamboree on the Air, held over the weekend of 19-20th October 1991, was received recently in the Executive Office. Once again the figures are impressive.

In Australia 653 stations operated, on behalf of 970 Scout groups and 913 Guide units, enabling a total of over 25,000 young participants to

make over 10,000 contacts. Comparison with figures from recent years shows that despite all the other attractions available, amateur radio is still high on the interest list of these young people.

Surely JOTA must be one of amateur radio's best recruiting and public relation events.

## Congratulations to JMI1UXU

The Japanese Amateur Radio League recently reported that the 4th Class Order of the Sacred Treasure was conferred upon Masayoshi Fujioka, JMI1UXU, Secretary of the IARU Region III, in recognition of his contributions towards telecommunications and his activity

in WARC and other ITU conferences.

Masayoshi was re-elected Secretary of IARU Region III for a further 3-year term at the IARU Conference in Bandung late last year.

## Amateur Radio Deliveries Problems

Amateur Radio magazine delivery to members is still suffering some minor problems. The mailing house machine is again occasionally inserting two address fly sheets in the one package.

A number of November issue deliveries were affected, and it seems that this fault recurred with some of the January 1992 issue. Once again, thank you to those

# WIA DIVISIONS

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers	Weekly News Broadcasts	1992 Fees	
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7008	President Secretary Treasurer	Christopher Davis VK1DO Jan Burrell VK1BR Ken Ray VK1KEN	3,570MHz 2m ch 6950 Rebroadcast Mondays 8pm 70m ch 6925 2000 hrs Sun	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram St Parramatta NSW (PO B or 1066) Parramatta 2124 Phone (02) 689 2417 Fax (02) 633 1525	President Secretary Treasurer (Office hours)	Roger Henley VK2ZIG Bob Lloyd-Jones VK2YEL Bob Taylor VK2AOE Mon-Fri 1100-1400 Wed 1900-2100	From VK2W at 1045 and 1915 on Sunday on the following frequencies and modes: (1045 only): 1.845 AM, 3.595 AM morning and SSB evening, 7.146 AM; 10.125 SSB; On relay 14.160 SSB* and 21.170 SSB; 29.320 SSB; 52.120 SSB; 52.525 FM; 144.120 SSB; 147.000 FM; 439.525 FM; On relay 584.750 ATV sound, 1281.750 FM. Plus automatic relays to 2m repeaters surrounding Sydney and manuals to several county repeaters. News headlines by phone (02) 562 5188	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 403 Victory Boulevard Ashburton Vic 3147 Phone (03) 865 9261	President Secretary Treasurer Office hours 0830-1530 Tue & Thur	Jim Linton VK3PC Bary Wilton VK3XV Rob Healey VK3XLZ	1.840MHz AM, 3.815 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon, 147.225 FM(R) Mt Baw Baw 146.800 FM(R) Midland 146.700 FM (R) Mt. Dandenong 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane Qld 4001 Phone (07) 284 9075	President Secretary Treasurer	John Aarsse VK4QA Bob Luss VK4ER Eric Fillock VK4NEF	1.825, 3.805, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400, MHz 52.525 regional 2m repeaters and 1296, 100 0900 hrs Sunday Repeated on 3.805 & 147.150MHz, 1900 Monday	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK5	South Australian Division 34 West Thebarton Rd Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Rowland Bruce VK5OU John McKellar VK5BJM Bill Wardrop VK5AWM	1820kHz 3.550MHz, 7.085, 14.175, 28.470, 53.100, 145.000, 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 146.500 146.500, 0900 hrs Sunday	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6005 Phone (09) 398 3888	President Secretary Treasurer	Cliff Bastin VK6LZ John Farnen VK6AFA Bruce Hedland-Thomas VK6OO	146.700 FM(R) Perth, at 0900 hrs Sunday, relayed on 3.550, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525MHz. Country relays 3582, 147.350(R) Busselton 146.900(R) Mt Willem (Bunbury) 147.225(R) 147.250(R) Mt Scaddoock 146.725(R) Albany 146.825(R) Mt Barker Broadcast repeated on 146.700 at 1900 hrs	(F) \$60.75 (G) (S) \$48.60 (X) \$32.75
VK7	Tasmanian Division 148 Denwent Ave Lindisfarne Tas 7015	President Secretary Treasurer	Tom Allen VK7AL Ted Beard VK7EB Peter King VK7ZPK	146.700MHz FM (VK7FH) at 0930 hrs Sunday relayed on 147.000 (VK7RA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$67.00 (G) (S) \$53.65 (X) \$39.00
VK8	(Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28MHz).			Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times

Note: All times are local. All frequencies MHz.

members who have notified the Executive office of extra fly sheets received with their copy of the magazine, thus enabling us to forward magazines to those members who missed out.

## Parliamentary Report on RF Spectrum

As previously reported, some months ago the WIA made a submission to the House of Representatives Standing Committee on Transport, Communications and Infrastructure concerned with their inquiry into Management of the Radio Frequency Spectrum. The Committee called for initial inputs from the community and, having digested those, together with verbal evidence, posed a long series of questions for further consideration and written response. The WIA also responded to that extensive question list.

The WIA received copies of the written submissions, 75 in all, together with transcripts of the verbal evidence and now the final report.

The Committee's Conclusions and Recommendations are extensive, however they may be summarised as follows:

### Conclusions

Spectrum management objectives must be clearly defined, accurate and relevant. They must take into account the immediate demands and the potential for rapid changes in technology and service innovations in the future.

The objectives should not impede the achievement of the broader communications policy objectives of government.

The objectives should define spectrum management from an operational perspective with a view to maximising the availability of spectrum to all users for all purposes. The two significant objectives from an operational perspective are dynamic and technical efficiency.

The spectrum manager should continue to be respon-

sible for ensuring observance of Australia's obligations with regard to the international planning process.

### Recommendations

There are six spectrum management objectives: dynamic efficiency, technical efficiency, provision for public and merit goods (we amateurs fit in here), allocation to highest value uses, international agreements and an equitable system of charges.

With regard to charges, actual cost recovery is recommended with clear identification of any taxation component. A means of recovering economic rent of the spectrum should be formulated.

In fine tuning aspects of the current spectrum management system, DoTC audit of spectrum utilisation, by monitoring both of frequency bands and congested use locations, is recommended. This is to be associated with extensive data bases, termination of frequency registration certificates and private sector frequency coordination services.

It is recommended management be by a mixed market and administrative system and the tradeability of spectrum resources be introduced for commercial users. Non-commercial users should have the option to retain the current administrative system or convert to the tradeable one. Auditing of spectrum use for public sector users should be introduced and tradeable spectrum should not be perpetual but have a fixed term tenure like a lease.

### How could this affect us as radio amateurs?

Firstly we need to become more efficient in using spectrum; perhaps our band planning needs to be more timely with unused spectrum from obsolescent modes recycled. This can be achieved by flexible multi-use or layered band plan allocations.

We should anticipate user pays cost recovery of management of our allocations and, coupled with that, more frequency coordination action on

our part. Incidentally, that coordination must extend beyond our allocations for issues such as site compatibility.

Finally we must use our frequencies, for they are likely to be monitored for occupancy more frequently by automated means.

### More on Harry

The 100th Birthday of Harry Angel VK4HA, was featured in an article in the December 1991 issue of *Amateur Radio* magazine. Harry's birthday attracted quite a lot of media attention in VK4, including the use of the cover of the December 1991 issue of our magazine on at least one television station, and interviews with Harry himself. Great publicity for amateur radio!

### Radiocommunications and EMI/EMC Standards

The DoTC has requested input from the WIA towards establishment of Departmental standards policy, following a conference in Sydney in November. Two discussion papers "New Approaches to Radiocommunications Standards Setting Policy" and "Electromagnetic Compatibility Standards" were provided.

According to the DoTC these papers "are intended to promote discussion on new policy approaches which could have a significant effect on radiocommunication services and wider industry. Given the potentially far-reaching effects of such standards, it will be necessary to have a clear view of the overall objectives that are to be achieved. The intention of this consultation process is to ensure that the outcome is a responsive and effective standards framework based upon an appropriate balance of statutory controls and self-regulatory arrangements to facilitate the effective operation of electronic communications systems, to encourage the development of new

services and technologies, and to provide positive incentives for the most economically efficient uses of the radio frequency spectrum, to the social and economic benefit of the Australian community."

The papers stress the need for Australia both to have input to establishment of international standards, and to conform to those standards for the sake of both manufacturers and consumers. They also suggest possible procedures for demonstration of compliance, auditing of performance, and phasing in of new regulations.

The WIA has long advocated the establishment of, and adherence to, standards, especially with regard to EMI/EMC. The papers have been circulated to a number of WIA representatives for their comments and preparation of a response to DoTC. Unfortunately, as often happens at this time of year, the response time is unrealistically brief—we received the letter on 8th January, and the deadline for responses is 30th January!

### Channel 5A Problems

A note of concern from John Martin VK3ZJC, the WIA FTAC Chairman.

"I have recently noticed strong QRM on the lower end of the 2 metre band. This is due to an ABC TV translator 100 km away changing over to stereo sound. The second audio sub-carrier is on 143.990 MHz, and with 50 kHz deviation it extends well into the 2 metre band. This situation will become more serious as all ABC stations change over to stereo, and it will be particularly severe in areas such as Newcastle. I believe the 5A station there has a 25 kHz positive offset, therefore the second audio carrier is on 144.015 MHz. There will also be a parallel situation on 6 metres with Channel O stations radiating signals within our exclusive 52-54 MHz allocation.

I would appreciate any information from amateurs on

TV stereo interference. Amateurs living in Channel 5 areas may also be able to advise whether their local TV stations are radiating interference in the 108 MHz aircraft band."

Radio amateurs who wish to supply information should send it to John care of the Executive Office.

## SEANET 1992

The Darwin Amateur Radio Club will be hosting the 20th Annual South East Asia Net Convention at the Beaufort Hotel in Darwin from 29th October to 1st November 1992. DARC will be arranging accommodation packages from five star quality downwards. Make a note in your diary now for the 29th October to the 1st November 1992. More details in future WIANEWS.

## Improper Use of the Amateur Bands

Following discussion and a Resolution at the International Amateur Radio Union meeting in Bandung late last year, the IARU Administrative Council has produced a special issue of its Calendar to outline the IARU position on the growing problem of improper use of the amateur bands.

Most cases of improper use can be categorised as either - 1. "Intruders" operating contrary to the Table of Frequency Allocations and causing inter-

ference as a result;

2. Unlicensed stations; or  
3. Satellites launched for non-amateur purposes but using Amateur Satellite allocations, or amateur satellites being used for non-amateur purposes.

The Calendar emphasises that the first step must always be to bring the offenders to the notice of the local administration, except perhaps where the interference is readily traced to a fault in the transmitter. In this case, the technical staff responsible for the transmitter may be contacted directly.

The IARU is not a police force, and has no authority to enforce agreements between nations on telecommunication matters. It can, however, help to "educate" administrations and encourage them to take corrective action. In a situation where complaints by a member-society cannot be resolved with the local administration, the regional IARU Monitoring Service coordinator may assist in approaching the administration.

The IARU Monitoring Service is a network of amateur stations who document the operation of unauthorised stations in our bands. There is always room for more interested amateurs to join this activity.

## International Representation Fund

WARC 92 will convene in

Torremolinos in Spain on 3rd February 1992, so by the time members read this, the WIA delegates, David Wardlaw and Ron Henderson, as members of the Australian Government team, will be on their way.

The preparations for this WARC have been prolonged and intense, as well as expensive. The WIA is very appreciative of those who have made donations to the International Representation Fund to help cover these expenses.

The fund is financed chiefly from membership fees (\$2.00 per year of your subscriptions - \$1.60 if you are a concessional member - goes to this fund) but it has been very pleasing to receive extra donations both from members and non-members.

WARC 92 is just one of many situations where the WIA is attending as the representative of all Australian amateurs, non-members as well as members, and presenting the case for retention or extension of privileges for the whole service.

Donations received since the last acknowledgment in this magazine include: Mackay AR Association RAAF Williams ARC Qantas ARC R Cortis VK2XRC D Rosenfield VK3ADM G Muirhead VK4WEM H Hoover W6ZH R Huey VK2AHU D Friend VK4OE L Schmidt VK4JZ R Harris VK5RR G Percy VK5OR

R Tulloch VK4BF  
Orange ARC  
G Selwood VK2KJX  
H O'Brien  
D Clarke VK2K?  
V Marsden VK2EVM  
P Gammie VK2MHN  
F Hoy  
E Hicks VK2VOH

Although the expenses will reduce for a while after WARC 92, the fund will still be maintained as a separate budget item because international activities and needs are ongoing. Donations will continue to be welcome, and non-members donating to this fund can be assured that all such donations are committed to works for the benefit of all amateurs.

## Celebratory Prefix for Finland

A recent fax received from the Finnish Amateur Radio League (SRAL) announced that the Finnish Telecommunication Centre has given all Finnish amateur radio operators permission to use the OG prefix, rather than the usual OH prefix, for the whole of 1992. This is to celebrate the 75th anniversary of Finnish independence.

A special award has been issued by SRAL. To obtain the "Suomi 75 vuotta" award you need contacts with 75 amateur radio stations. More details may be obtained from the SRAL Awards Manager, Mr Jukka Kovanen, Varuskunta Rak 47 as 11, SF-11310 Riihimäki, Suomi-Finland.

ar

# Australian Radio — The Technical Story, 1923-83

WINSTON T MUSCIO ISBN 0 949924 82 2. KANGAROO PRESS, SYDNEY, 1984

SUBJECT: TECHNICAL HISTORY OF RADIO BROADCAST EQUIPMENT IN AUSTRALIA

Winston joined STC in 1933 and stayed with that company till his retirement in 1980. He held senior engineering and management positions during the company's development of broadcast and commercial radio equipment, and during WW2 he was involved in military radio production. His book has detailed background and technical information on many of the radio transmitters and receivers built by AWA, STC and Phillips.

There are chapters on broadcast receivers, broadcast transmitters, communications transmitters and receivers and mobile radio systems. In addition, he covers

audio, recording and tape equipment. The emphasis is naturally on STC designs.

For amateurs, the STC AMR-300, AWA AMR-100 and Kingsley AR7 communications receivers are mentioned, as are military sets such as the WS Type 109, AT14 and AT20 etc. The author admits his effort is not a complete history, but, for the technical historian, it is a valuable reference.

Size is A5 and it comprises 244 pages, with several photos, circuit diagrams and charts. Original price was \$32, and it is now about \$20 in the second-hand bookshops.

Colin MacKinnon VK2DYM ar



# The Diamond Antenna

BEET WARD-COTTAGE No 36 EVENTIDE HOME  
CAMPBELL ST ROCKHAMPTON 4700

**F**OR THOSE NEEDING AN antenna for the HF bands to fit in a restricted space, maybe the "Diamond" offers the solution ...

This article was originally developed so that amateur radio operators could enjoy their hobby even though they lived in situations where it is not possible to erect the more conventional type of aerial.

Like quite a few "hams", I live in an "old crocks' home" and, in many cases, a proposal to use a sizeable radio aerial brings cries of protest and usually permission to erect one is refused. Thus, most of the amateurs are limited to 2m and/or 70cm.

The aerial is quite small in size and is, in the old imperial terms, approximately 2ft square and designed to fit onto the normal barge mount as used to mount TV antennas on the fascia board of a house, as the enclosed sketches will show. It can also be mounted on the front end of a caravan, taking up little space. It is so unobtrusive that little or no comment is aroused. For portable and emergency operations, a short mast about 12ft long is quite okay, so if your main aerial is damaged by wind etc, you can be back on the air within a very short time. At this QTH it can be erected in about 20 minutes.

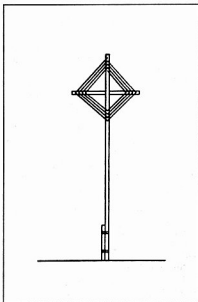
The cost to construct is quite reasonable, and should be around \$20 to \$25, including new wire (insulated is best).

The aerial uses a single wire feeder and should be coupled to the TX via an antenna tuner when an SWR of 1:1 can be expected.

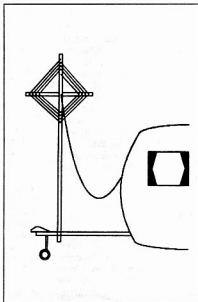
For the frame you will require  $7\frac{1}{2}$  feet of 1"-square timber; about four dozen non-ferrous nails with reasonable size heads each  $\frac{3}{4}$ " long; and 75ft of insulated wire. One waterproof connector is needed to attach the feeder.

The winding is in the form of a spiral; not the more usual form of inductor. The feeder is connected to the end of the winding nearest to the centre of the cross, and the connector is mounted on the lower arm of the framework. I think the sketches will make all things fairly clear.

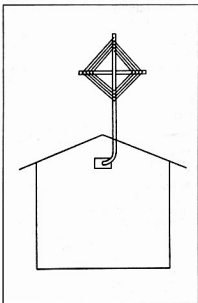
In the first model, the wire used was white figure 8 split down to make single



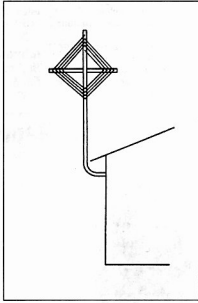
*On short pole which is supported by 4ft piece of pipe etc driven about 12" into the ground.*



*Front end of caravan.*



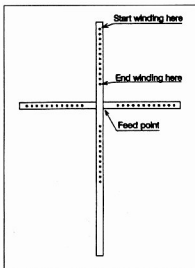
*This is a good position.*



*This is okay, but roofing tends to affect radiation somewhat.*

conductor. That was what I had on hand. Later, the wire was changed to medium duty wire 10/0.25 with black plastic covering.

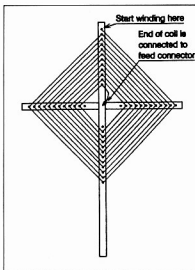
ar



Middle joint is normal halved-in joint. Very easy to do. Timber should be made waterproof with Estapol or similar suitable paint.

The small nails are put as shown. The first one is 1" in from the end of the arm, and all the others are spaced 1/2" apart.

It is a good idea to put 12 nails in each row. This will take about 85ft of wire. You can remove any unused ones or leave them in. If this stub end is too large to fit into the top of the barge mount, suitably sized "U" clips can be used.



This drawing is not to scale, but does show the winding. I found it easiest to start from the outside and wind towards the centre.

# Technical Correspondence

## Improved Great Circle Bearing Program

I HAVE BEEN experimenting with the Great Circle distance and bearing program submitted by VK3IT in the January issue and have made a few modifications that others may find useful. For a start, my version of Basic (GW-Basic v.3.2) does not support the ACOS or the ARCCOS command, so it was necessary to use the ATN command as at lines 160 and 190. Incidentally, the manual omitted the "minus" sign after the initial bracket, and I found it was required by using log tables. Remember them? Next, I thought it would be unusual to know a co-ordinate, particularly an overseas one, down to seconds (one minute of latitude is about 2km), so the conversion of seconds to radians came out. Then I truncated the distance and bearing to whole numbers (the PRINT USING command). Finally I reduced the accuracy of the conversion factors to more common or garden values, and found it made a difference of 1km in the distance from here to London. Incidentally, I rearranged the lines 240-270 (original program) because I was being told I had a problem with the bearing calculation before the distance result had been printed and so had no indication whether the distance calculation was right (it wasn't).

I hope the above is of some interest and that VK3IT forgives me for tampering with his work. The alterations are not meant to be a criticism in any shape or form.

J H Knowles VK3JK  
PO Box 11, Yinnar 3869

## More on Element Phasing

Des Greenham has revived a most versatile antenna that, using tuned feeders, can be used efficiently over two to three octaves. The basic idea is credited to Franklin, who arranged many half waves, connected together with quarter-wave stubs, in a line to form a broadside array. This is still an excellent method, set up vertically, of obtaining a high-gain omnidirectional antenna with a low angle of radiation suitable for 28MHz and higher. In that application, end feed at the bottom is usually preferred.

Back to Des' antenna; another dB or

two can be obtained by making the elements five-eighths wavelength. This will also improve its efficiency at 7MHz and it will be quite usable at 3.5. The pattern changes and breaks up if five-eighths is exceeded. This was the antenna issued with the Army "portable" 5kW SWB 8. Links in the elements allowed for several bands to cover 2-22MHz.

Robert R McGregor VK3XZ  
2 Wiltshire Drive  
Somerville 3912

## Heading Finder

I was interested in the article by VK5BFB and VK5JG in the December '91 issue of *Amateur Radio* (page 21) on the modified globe heading finder.

I have used a similar model for some 20 years and, within a second, can find any direction, long or short path.

The construction needs only two additional holes drilled in the globe and a marking pen for markings as follows. (No special skill required, and takes only 20 minutes at most).

- 1) Take any globe out of the usual holder pins at North and South Poles.
- 2) Drill two new holes in the globe, one at your QTH, and the second directly opposite.
- 3) Clip the globe back into the original holder but positioned now in the new holes.
- 4) Take a marker, hold it on the globe-holder centre (0) and turn the globe, marking a ring around at your new equator).
- 5) Position the North Pole on the globe under the half-round holder and mark this point as "N" on the new equator.
- 6) Turn the globe through 180 degrees and mark "S".
- 7) Follow this procedure until you have marked on your new equator on the globe: N, NE, E, SE, S, SW, W, NW, turning it clockwise at the top, and there is your direction finder.

The area under the half-circle holder is short-path. Opposite is long-path.  
PS: If you use the globe frequently, fit two metal eyelets in the new holes and they will never wear out.

John Kramreiter VK3DCJ  
7 David St  
Knoxfield 3180

ar

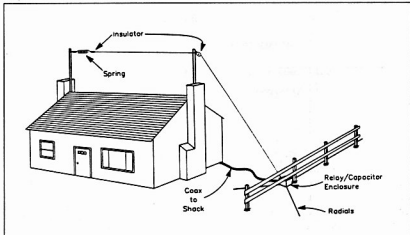
# Random Radiators

RON FISHER VK3OM AND RON COOK VK3AFW

## Restricted Space Antennas

**J**IM VK2DJM, WHO RESIDES in a retirement village at Ballina, reports on his present antenna system. He had tried to use a commercial vertical, but was unable to get it to tune properly and concluded it was faulty. Unfortunately, when it was shipped back to the agent, thieves struck and half the antenna disappeared in transit.

Now Jim is not easily discouraged, so he cut a dipole for 14.028 MHz and installed it on the outside wall of his unit, using nails, egg insulators and picture-frame wire. It is only about 15 cm (six inches) below the gutter and clears the brick wall by about 3 to 5 cm (one or two inches). In plan view it looks like a square ring, with a gap on one side. It is



fed with 75 ohm coax - I can't recall if he used a balun or not.

He had immediate success, receiving reports of 579 to 599 from all around the globe. With the aid of an antenna tuner, he has also been able to operate on 18, 21, 25 and 28 MHz. To date there have been no TVI problems.

So, don't neglect the humble wire dipole, don't be concerned if it has to be bent to fit your situation, and don't dismiss the possibility of working DX with an antenna as low as two and a half metres (about 8 feet).

## Another Wire Special

The July 1991 issue of QST contains a good article by Dennis AE6C, on a multi-band inverted L antenna. With combined vertical and horizontal radiating sections both local and DX operation is achieved, the horizontal section giving high angle radiation for locals and the vertical section giving low angle radiation for DX. It is cheap and simple to build and is capable of operation on two or more bands.

The disadvantages are the need for an efficient earth or counterpoise and the need to use a matching unit.

Dennis suggests using a total wire length of 3/8 wavelengths on 80 metres, 96 feet total length, with 64 feet (nominal) of this arranged horizontally. The horizontal section can be supported by masts fixed to the ends of the house. If your house is not 64 feet overall, you can reduce the horizontal section by up to 15

feet, indeed Dennis used 50 feet for this part. Alternatively, try a diagonal or use a mast fixed to a fence post. In practice, if the horizontal section is between 50 feet and 70 feet in length, no significant problems will arise. The 'vertical' section need not be vertical and Dennis suggests sloping it etc. So long as the total length is about 96 feet there is nothing critical about the relative lengths of the vertical and horizontal sections.

The vertical (sloping section) will work better if it is well clear of buildings and trees, and the horizontal section should be as high as can be arranged. Due to the length of the 'vertical' section, the maximum height will be about 35 feet.

Because there is no coax feeder to support, the masts used can be of quite light construction. Painted timber would be ideal. Don't overlook the possibility of using one or two trees to hold up the wire. A bit of a slope on the horizontal section won't matter.

For earthing, Dennis used an 8 foot (2.4m) long earth stake in part of the garden watered by an in-ground sprinkler. This is supplemented by three radials, two less than 20 feet long and one about 100 feet long which snakes along the side fence. While the antenna will work with only the earth stake, the addition of buried radials up to 20 feet long or an insulated counterpoise system will improve the antenna efficiency, particularly if it is to be used on 160 metres.

The feed impedance will be about 100 ohms on both 80 and 40 metres. A remote

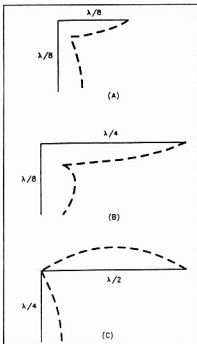
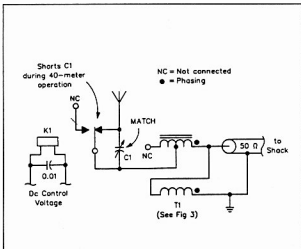
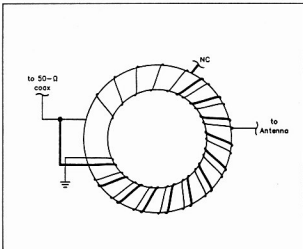


Fig 1 — At A, the basic inverted L commonly used on the lower frequency ham bands. The dotted line represents current distribution. The 3/8-wavelength inverted L shown at B features a more favourable current distribution. At twice the fundamental (C), the antenna at B acts as a 3/4-wave. Note the two current maxima. The antenna behaves like a quarter-wave vertical end-feeding a half-wave dipole.



**Fig 2** — The resonating, impedance-matching and band-switching circuitry required at the base of the inverted L, assuming a 50- $\Omega$  coaxial feed, no antenna tuner and a limited ground-radial system. See text for details and other feeding options. Fig 3 shows details of T1.



**Fig 3** — Winding details for constructing broadband bifilar transformer T1. You can use an Amidon FT-240-61, FT-240-43 or T-200-2 core. The primary is 16 turns of no 14 enamelled wire, and the secondary is 10 turns of no 14 enamelled wire tapped at about the eighth turn from the feed-line end.

antenna tuner could be used to match to 50 ohm line which could be buried for the run back to the shack.

Dennis used a tapped bifilar transformer and a capacitor to achieve good matching on 80 metres. On 40 metres the capacitor is shorted by a relay, and the transformer provides an adequate match. Details are given in the article.

I suggest that a length of 75 ohm coax could be used with matching achieved by an ATU in the shack. The SWR on the 75 ohm coax should not exceed 3:1 approximately across either band and should be about 1.3:1 at resonance on 40 metres. No significant losses will occur with such an arrangement. Whatever arrangement is used, don't forget to seal the coax connections (and external match unit if used) against ingress of water.

The antenna can be used as a short top

loaded vertical on 160 metres but it is not resonant and needs a series inductor switched in at the base of the 'vertical' section. The feed resistance will be perhaps 15 to 20 ohms. It is 3/8 wavelengths long on 80 metres and the feed impedance is reactive, appearing as about 100 ohms resistance plus some series inductance. On 40 metres it is 3/4 wavelengths long and should be resonant in the band with a resistance of about 100 ohms.

Unfortunately on 20 metres it is 3/2 wavelengths long and has a high feed impedance which would require a different matching arrangement. On 15 metres the antenna is 9/4 wavelengths long and should be resonant at or just below the bottom of the band. The feed resistance would be more than 100 ohms but should be manageable with an indoor ATU and the 75 ohm coax suggested.

Dennis does not consider using the antenna on any frequency other than 160, 80 or 40 metres and suggests a double size unit if 160 metres is to be used often. Yet the system should operate quite well on 80, 40 and 15 metres, and with reduced performance on 160 metres with an indoor ATU. If an ATU is installed at the end of the 'vertical' section, (commercial, weatherproof, remotely operated ATUs are around) then all HF bands could be used.

Copies of the original article may perhaps be obtained from the WIA.

**73 from the two Rons. ar**

(Illustrations from Dennis Monticelli AE6C 'A Simple Effective Dual-Band Inverted-L Antenna' QST Vol LXXV No 7 July 1991 pp38-39.)

## TRY THIS

# Morse Key Holder

PETER SPENCER V5KBB

Having built a nice new operating desk for my gear, I was rather loath to screw the key down to the desk top.

After some thought, I tried securing the key base with four pieces of double-sided adhesive pad material which is sold for the purpose of fixing pictures to a wall or other similar uses. This has worked very well and the key is as solid as a rock.

My desk is covered with a material similar to Laminex, and is quite smooth, so I imagine the pads would adhere quite well to most similar materials. Should it be necessary, at any time, to remove the key, the pads can be removed with any common solvent such as Shellite or X55. If necessary, a trim knife can be used to cut judiciously through the thickness of the pads. Removal of the pads leaves no trace of any marks, and the desk surface is preserved.

ar



# The RL Drake Company: 45 Years Young (1988)

BILL FROST WD8DFP. SUPPLIED BY JOHN WEIR VK3ZRV  
(CONTINUED FROM JANUARY ISSUE)

**T**HE COMPANY CONTINUED TO produce satellite equipment for other manufacturers under their names. Receivers at this time were being shipped at a rate in excess of 10,000 units per month. A peak occurred when 19,000-plus units were shipped in one month.

The European home satellite market was just beginning, with only a couple of satellites reaching Europe. This market beckoned for a well engineered, quality product. The call was answered with the ESR-424E, APS-424E, ESR-324E and the APS-24E. These units were well established in the USA and, with a few minor changes, to meet the European requirements, were soon in much demand by overseas distributors. The 424 series units were updated and improved in 1986 and became the 524 series.

Single conversion was losing out to the block type units and were dropped as an alternative model. The ESR-524 receiver was the top-line receiver until the announcement of the ESR-924i. This imported receiver was introduced in 1986 as the company's first integrated receiver.

It housed the receiver, antenna positioner and included stereo sound. On-screen graphics were added later to the ESR-924i to make it even more popular. The ESR-324B was given new life with a redesign, and the announcement was made on the release of the ESR-324S which included stereo, and the ESR-324i, which included stereo and the antenna positioner. Both units were met with great acceptance by the marketplace. These units are still a part of the company's product line.

In January 1987, and again in January 1988, the company was named by the Greater Dayton 100, as being among the top 100 largest, closely held companies in the Dayton area, based on product sales and employees. In September 1987, the Service department received a plaque and honours for being the top service department in the TVRO industry, and for having a quick and speedy parts department. The honours were received from the Electronic Technician Association Inc.

The ESR-2400 was introduced in 1987 as the company's first IRD (Integrated

Receiver Decoder) receiver. The unit contains stereo audio, antenna positioner (pot or pulse type), C band or Ku band compatibility, on-screen graphics, infra-red remote control, and the video cypher II (tm) decoder model. The ESR-2400 is the ultimate receiver and an example of the R L Drake Co engineering department's excellent expertise. The ESR-2024 was later introduced as a little brother to the ESR-2400. It had a few less bells and whistles, but it still retained the same high quality. These two units are the company's top guns for today; however a relentless competitor expects to take over as number one in the industry. The R L Drake Co and its employees do not intend to let that happen.

An R L Drake Co "Made in America", product is beyond ultimate!

Compiled and written by Bill Frost (WB8DFP) Service Department Manager R L Drake Co.

*First printed in Printed Circuit, the in-house publication of the R L Drake Co  
Miamisburg Ohio USA.*

ar

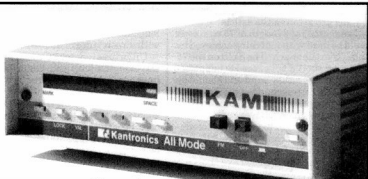
## For the discerning amateur - the Kantronics All Mode Data Controller

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\* Requires Hostmaster II software and IBM PC type computer



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# Amateur Radio in China

(With some emphasis on 6 metres.)

RON GRAHAM VK4BRG PO Box 323 SARINA 4737

**M**Y RECENT VISIT TO China, together with three other VK amateurs, was primarily to participate in a Radio Direction Finding competition in Nanjing. We also had the opportunity to visit four Club Stations and meet a number of Chinese Amateurs.

Four prefixes were noted to be in use; BY for Club Stations, BZ for Individual Calls, BT for Special Events, and BR for repeaters. At this stage in time, no "individual" (private call holder) has equipment at home. Consequently, their operating is done from a club station where they can use their Individual or the Club callsign.

I noted QSL cards being sorted and it appears that most Individual call holders use their Club mailing address and that they are responsible for their own QSL'ing. One of the Club's Directors handles the cards sent to the Club call. From my observations, log keeping appeared to be of a satisfactory standard.

## Licences

There are four licence classes with 1st Class being the highest and demanding a 90 character per minute (CPM) Morse ability. The 2nd Class licence has a Morse requirement of 80 CPM and the 3rd Class 70 CPM. I understood, though there was some language difficulty, that both the transmitting and receiving Morse tests were for a duration of ten minutes each... a long period by our standards. There is a graded technical examination for the above licences. The 4th Class licence is for SWLs and no call sign is available.

Apparently there are 30 to 40 each 1st and 2nd Class licences in the whole country. When I enquired about the number of 3rd and 4th Class licence holders, the answers were "many" and "many many" respectively... guess we draw our own conclusions!

## Beijing

In Beijing we visited BY1PK and, as this station is in the national capital, the fact that it seems the best equipped is no coincidence. The station is on the top



*Antennas on the roof of BY1PK Beijing. The two HF Beams are obvious, the wire cage antenna between them is used on 40m. Under the right hand HF Beam are the 2m and 70cm satellite antennas.*

floor of a four storey building with the antennas on the roof. Two HF stations with associated beams...one station is dedicated to packet. A satellite station (Mode B) and the 2 metre repeater (BR1PK) are also installed. The 6 metre equipment consists of a TS-670 feeding a manually rotatable 6 element yagi about 3 metres above the roof. It was noted that when the beam is facing the east, it is firing into a concrete structure on the roof. The 6 metre rig had been disconnected, but was soon reconnected when I showed interest. A few CQ calls were made, but no response. One of the Club directors told me that they have only ever worked JA on 6m and he seemed fairly well convinced that they were too far north to enjoy any other worthwhile propagation. Naturally, it was difficult to convince them otherwise, however, the subsequent contact between VK4JH and Mongolia may help the argument. To my way of thinking Beijing lies nicely be-

tween Mongolia and Japan, so it should be workable, at least from this part of the world. The fact that the 6 metre rig was disconnected and that Kang, BZ4SAA, said BY1PK was not very active on 6, indicates they need some more inspiration regarding 6 metres!

## Other Clubs

We next visited Nanjing, the venue for our Radio Direction Finding activities. The Club had a special call, BT4RDF, organised for the duration of the above activities and is set up for HF operation including packet. No 6 metre activity is possible in Nanjing due to the band being occupied by TV.

To assist readers with their geography, Nanjing is 300 km west of Shanghai. The next Club visited, Zhenjiang, is about 70 km east of Nanjing and is part of a complex known as the "Childrens' Palace". This complex seems to me to be dedicated to both general education and

# Bringing Amateur Radio to (Adelaide) Camp Quality 1991

CHUCK WAITE VK5CQ, GPO BOX 222, ADELAIDE 5001

many extra curricular activities of which amateur radio is one. The station, also on the top floor of a 3 storey building with the antennas on the roof, is equipped for HF and 6 metres. The 6m station has the advantage of a 150 watt amplifier. There had been a problem with the 6 element 6m beam, and as an in-line SWR/power meter is permanently connected, I observed that the SWR was quite low and the amplifier was delivering 100 watts.

The Director of the station is retired from the army where he was the chief instructor in radio signalling. His wife, an English teacher, and his two sons, one of whom is soon to graduate in electronics, are all present and they all hold amateur licences. The Director prefers CW operation and was not aware of the 50.110 calling frequency or the 28.885 liaison frequency. I did note in the 6 metre log book contacts with 3D2PO and VK8ZLX on the 26th July.

About 150km further east we visited BY4SZ in Suzhou where Kang BZ4SAA is the Director. Kang is well known in VK as he has supplied most of us with China on 6 metres. He has acquired some nice equipment for the club. an FT-ONE was feeding a TL-922 linear on HF. A Henry 2K4 linear and a 5 KVA mains power stabiliser looked very impressive. The station also has a small HF rig which has been used on DX-peditions. A TS-600 or a FT-726 and a 5 element yagi are used on 6 metres and Kang is expecting, from a JA8 friend, a 500 watt amplifier due next year. QSL'ing may be a little slow from this station as Kang explained that the post office is quite a distance away, so they only clear it once per month.

So the club is the centre of amateur radio activity in China and it is pleasing to note the emphasis on getting the young people involved. Actually, the clubs are under the control of the "Chinese Radio Sports Association" (CRSA) with the club Directors being paid by, and the clubs operating within, a budget provided by the CRSA. Nevertheless, most club equipment has apparently been donated by Japanese sources, and a little from American sources.

## Six Metre Possibilities

From the accessibility of China on 6 metres, particularly from the US and a lot of the Pacific, I was thinking that area around Guangzhou (Canton) could be the most practical. This area as well as being fairly well south, is close to the well established paths to Hong Kong and Manila. However, from what I could learn, there is no 6 metre activity and, indeed, no club activity, in that area. Possibly this could be followed up with some of the VSE amateurs, some of whom may have contacts in that area. **ar**

## Amateur Radio at Camp Quality '91

**C**AMP QUALITY IS A week of quality camping activities for children who have — or have had — cancer. Camp Quality '91 was a week of good fun for campers and volunteers alike, under the caring administration of its Director, Dr. Keith Bailey.

We in the Amateur Radio community are proud to have been among the many volunteers who helped make this year's camp a success for its campers.

Below is a report of some of the events that comprised our work, our experiences on-camp, and some of our joys resulting from the same.

## What Happened at Camp this Year?

Camp Quality '91 provided activities (from Sunday 29 September through Friday 4 October) for about 60 children and a like number of their adult companions. In addition, some day-campers joined in the activities when their schedules and conditions permitted.

We amateurs, like other volunteers, participated on a part-time basis, fitting our program of activities into a busy camp schedule.

## Antenna & Station Setup

On Sunday afternoon, while the children, their companions and camp staff were settling into their dormitories, we began the work of setting-up and testing our antennas and stations.

Station equipment, comprising a Kenwood TS-820 and ICOM-based voice packet stations covering 160-10, six and two metres, was supplied by the WIA and Chuck VK5CQ, respectively. Thanks to Murray, VK3JZ for testing and arranging transport for the WIA's transceiver.

The Adelaide Hills Amateur Radio Society (AHARS) supplied a portable three-element beam for the traditional DX-bands, 20, 15 & 10 metres, in the form of a TH3j, as well as a team (comprising Geoff VK5TY, Christine VK5CTY, John VK5CSH and Brian VK5NOS) to set it up. The team did a good job, as our

first contact confirmed: Korea on the first call!

Shep, VK5DC, supplied a tape-doublet (a nifty Hy-Gain TD-1), which we used along with cable supplied by Morris VK5KWM for our evening inter-camp contacts on 80 metres. With the help of Tony VK5PBH, and the AHARS team, this antenna was soon in place on the spire, overlooking the building in which our station was set up.

## Electronic Kit-Building

For many of the children, technology has come to play an unusually large part in their lives, mainly in the form of instruments of examination or treatment. At the suggestion of Kevin Johnson (Camp Quality's Registrar), we offered each camper the chance to experience technology from a new perspective.

At Camp Quality's several technology sessions, our campers could get a feeling of being in control of technology for a change: building up an electronic kit from the component level gave them that feeling — along with a good helping of "I can do it!" when — at last — the assembled kit worked.

Most of the children built up two kits and — with the help of an "Elmer" or two from our team — experienced the satisfaction of success from each one.

This year's kits included a Morse Code trainer and a wireless microphone, as well as two LED-based toys.

We did our part to encourage our campers to get "on-the-air" — one way or another.

Thanks to one of our number, who thought to bring along sheets with the Morse Code! Several of the children expressed interest in Morse that was enhanced by a quick show-and-tell and reinforced by their being able to take along one of these sheets.

In fact, one of the day-campers told me he had gone to the library (the day after our Morse Code show-and-tell) to find a book from which he could learn more about Amateur Radio!

Lest I forget to thank the team of "Elmers" — both OM & YL alike — I'd like to mention those who assisted at the

kit-building sessions this year:

We were very pleased to have a roster of YLs along, members of the Australian Ladies Amateur Radio Association (ALARA): Denise VK5YL, Meg VK5AOV, Christine VK5CTY, and Paddy VK5ZYB.

Among the OM's were: Ray, VK5BT, Chuck VK5CQ, Rex VK5HO, Ron VK5RV, Lloyd VK5TP, Ron VK5VH, Murray VK5ZQ, Dave VK5CJE, Les VK5KLH, Morris VK5KWM, Norm VK5ZBO, and Grant VK5ZWI, as well as Cameron from the RAAF (whom we hope will become a licensed amateur in future).

## Those Spontaneous Radio Hams!

Our team really showed its spontaneity this year. When something was needed, it was there, even it had not been specifically arranged in advance.

If something seemed to go amiss in a kit, a solution was soon found.

Individuals came up with at least three designs for mountings or cases for the assembled kits. As a result, the Morse Code trainer ended up being far more durable, and the frequency of the wireless microphone was much more stable in the new design.

There were also at least two awards made to campers, of prizes created and provided by our team members.

Norm VK5ZBO, brought along a toy acrobat — which he had hand-crafted in wood — that aroused curiosity, as each child who saw it perform tried to figure out just how it worked. It was Norm's pleasure to award it as a prize to camper Paul, who managed to build up all four of the electronic kits with success!

We were also pleased to find among our number author Ron Holmes VK5VH, who presented a copy of his book *The Magic of Mr Ree* — about a radio ham in Mt Gambier — to our camper Adam, who lives in that part of South Australia. (Adam's voice was to be heard, on 80 metres, talking to his parents, via the Club Station VK5SR).

## A Hobby that Keeps You in Touch

When you think about it, Amateur Radio is also a great hobby for someone whose treatment may include periods away from friends or school. It can provide contact with other people when travel may be difficult or impossible.

Needless to say, we hope that some of our campers will eventually join our number in the fraternal hobby of Amateur Radio. To this end, we offered our campers a look at several of the operating modes and sides of our hobby.

## Amateur Radio Station Show & Tell

We purposely chose to locate the amateur station in the same room where kit-building was going on; the idea was to try to arouse curiosity in the station, by letting the campers listen to ongoing QSOs while they were assembling their kits. It worked!

Even those who chose not to talk "on the air" gave the receiver a try, some even managing to develop skills in tuning in SSB signals on HF.

## Our Chat with England

On Monday afternoon, Dave VK5CJE helped us by sharing his weekly schedule with England. Of course, Monday's weather was so sunny and warm that many of the campers chose to go swimming rather than partake of this warm conversation between friends, but it was good to make the connection for those who did partake.

## Campers Chat with Family Back Home

It has become a tradition at Camp Quality to try to connect some of the campers with their families back home; this year we connected some of those who came from the Mt Gambier area, with parents and a sister there, thanks to VK5SR (with VK5SI operating). It was a real joy to see our campers' eyes light up when they recognised their parents' voices on the radio!

## Chats with Camp Quality — Victoria

This year, some of the campers from Adelaide went to the Camp Quality held in Victoria; so, it was good to make contact with Warren, operating VK3CVQ there, so we could put some of our campers in touch with their friends in Victoria.

For those readers who have raised children through the teenage years, you can imagine what it sounded like; for the rest of us, it seemed to be more good fun for our campers!

## Putting the Camp's Video-Recordist into Contact with "The Old Country"

One afternoon, 20 metres opened into Europe. Soon, I managed to contact hams in Italy, in which the camp's video-recordist had been born. Of course, by the time I found him, this Italian station was nowhere to be heard ...

But there were more Iks here he'd come from and we contacted the next one! Imagine his surprise when I put someone on the mike "to surprise him" by speak-

ing excellent Italian!

As it turned out, this short QSO also aroused the interest of our recordist in Amateur Radio. He returned later that same evening to ask about the equipment and amateur licence examinations.

## Linking Up with a Space Station

On Wednesday — a day we were not originally planning to be at Camp Quality — I received a very unusual message on my pager:

02/10-09:17 Soviet cosmonauts can be contacted 11:32 to 11:42 — azimuth 307-130, Max elevation 65 degrees — tonight. Would you call them; they're waiting for your call. From Maggie VK3CFI.

PS "FREE-YO" is Russian for "OVER". Being open to a change of schedule, I contacted a neighbour, Collin VK5EB, who is active in amateur space communications. After running a PC-based satellite orbit modelling program, Collin confirmed there was indeed a chance to contact a space station that would be passing over Adelaide later that evening.

With this in mind, I rang Denise VK5YL (who had already volunteered to round up an additional Morse Code trainer kit for a camper to build on Friday) to ask if she or her OM, David VK5RN had any extra coaxial cable for the antenna that we would need to reposition for the link-up. Thanks to David, for making up the needed length, and to Denise for constructing the base needed for the antenna we went to use.

The link-up went smoothly, and our camper Gabi had a nice chat with each of the cosmonauts in the space station during its 10-minute window over Camp Quality, as was to be heard in the following week's WIA Broadcast.

Should I admit that I — a radio amateur, with years of experience in over three countries now — actually "choked up" when we first made contact with the space station? Excitement can really be contagious!

## Connecting with Victoria on Packet

Meg VK5AOV demonstrated how digital modes work, by connecting to VK3JAV on two metres via VK5RAD, VK5KAU, VK5RPM and VK5RPG. As a result, some lucky campers had "digital QSOs" with amateurs in Victoria on Friday morning.

(Of course, I managed also to read my mail during my stay at Camp Quality.)

## Meeting South Australia's Governor

Although originally planned for the benefit of the campers, some of us had the chance to meet the Governor of South

Australia, Dame Roma Mitchell, during her visit to Camp Quality on Tuesday afternoon.

As a newcomer to Australia (and, in particular, to South Australia), I felt honoured to be able to meet our Governor and tell her of Amateur Radio and the technology sessions at this year's Camp Quality.

As it turned out, her nephew was among the campers who had expressed interest in learning the Morse Code, after one of the technology sessions.

### Possible Improvements

Looking back over our week at Camp Quality '91, I think it's fair to say that things went pretty well as planned, and yet there were a few things which could have been improved. By way of suggestion for next year, we offer these reflections:

First, it was very good having our team members monitoring our HF contacts from their home-stations, so we would know when the two Camp Quality stations had doubled. Thanks to Dave VK5CJE, and Murray VK5ZQ.

But it would have been nice to have made a kind of announcement (say, on two metres) of our active operating frequencies, so that others could have enjoyed monitoring our inter-camp or space

station contacts, as well. Perhaps a message to a known packet-BBS would be a good way to share such details.

Next, it might have been nice to have a team hat or T-shirt such as the Robin Hood Archery Association had, so we could be identified as hams.

Of course, it would have been nice if more of us had worn hats, if only to help those who'd lost hair from treatments feel better about wearing their hats ... Next year, maybe we'll have a team cap!

I suppose we could have done better to chat with Camp Quality in Victoria before the campers' families in Mt Gambier, due to the time difference and the number of campers involved. Perhaps the solution would be to arrange more specific skeds in advance.

Last, but not least, as one who was encouraged to taste the Vegemite at lunch, albeit in a circle of fellow amateurs, I thought it would have been nice if someone else had also put a bit of this salty spread on their bread as well. Oh well, I suppose every newcomer must be initiated ...

### Thanks, All, for a Job Well Done!

Needless to say, we couldn't have done it without the fine support and efforts of the organisations and individuals involved. I've tried to mention, above, as

many as our records and memory let us connect with specific tasks, but some may have inadvertently been omitted.

To those who helped with Camp Quality '91, I'd like to express my appreciation, and relay that of the campers and staff, for a job well done!

It was sure a lot of fun, but I'm sure we also did some good up in Mylor!

Charles M Waite, M Sc, is a licensed radio amateur (VK5CQ in Australia, WG3L in USA), Member, Wireless Institute of Australia (WIA) — SA Division; Life Member, American Radio Relay League (ARRL); Technical Member, Technical Aid to the Disabled (TAD); Co-ordinator of Technology Activities for Camp Quality '91. Mr Waite is a permanent resident of Australia, who arrived in mid-April 1991. He is presently seeking to apply his talents in the computer/communications field here. E-Mail Address: VK5CQ @ VK5WI, SA,AUS,OC. Pager: 016 889 105. Postal address: GPO Box 222, Adelaide SA 5001.

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# The History of DX

JA GAZARD VK5JG  
2 CORBIN RD, MEDINDIE GARDENS 5081

**R**ADIO AMATEURS HAVE always needed a measure of the performance of their equipment, and from the start of amateur radio the obvious measure has been the distance over which signals could be heard. In the early days these were small. A history of amateur radio in USA, *Two Hundred Meters & Down*, shows the relative performances with different sizes of spark transmitters as follows:

Spark coil	1'	2'	4'	6'	10'	15'
Miles	1/4-3/4	5-10	10-20	15-30	50-75	75-100

If the spark coil was replaced by a 1/4kW transformer 100 miles could readily be obtained. The history also relates that in 1914 the 1kW input spark transmitter of H P Maxim, a leading amateur, had a range of 100 miles.

Today these distances seem incredibly small, but it must be remembered that the wavelength was around 200 metres; spark-generated transmission was very inefficient and spread its energy over a very wide band; the receiver was a detector only, with no amplification; and the aerials were untuned random wires.

After a new contact, an amateur could locate the new station on the map and scale off the distance in miles. Efforts were continually made to increase distance and, in morse code, the word "distance" was frequently used and was abbreviated, first to "d" and then to "DX", and this term has remained in use to this day, although it now has a wider meaning than distance in miles.

As improvements were made to equipment, distances improved considerably. In 1917, a special relay from the east coast to the west coast of USA was made in four steps, the longest of which was 1040 miles. Early in 1921, attempts were made to send signals across the Atlantic. In the first attempt times were set for Americans to transmit and Britons listened. There were a large number of British listeners, all using radiating regenerative receivers which caused great interference and jammed the transmission. Another test was held later in the year, and this time an expert American, Paul Godley, was sent over to Scotland and set up his receivers in a tent on the east coast near Ardrossan. This time, in 10 days of listening, more than 30 Americans were heard by Godley. Several British amateurs also heard the trans-Atlantic signals, but there was no two-way

working.

By this time some valves, ranging in power from five watts to 250 watts, had become available to amateurs, and some amateurs used valve transmitters in these tests. Although the valve transmitters had less power than the spark transmitters, two thirds of the stations heard used valves, and thus the superiority of the valve stations was demonstrated, and in a year or two spark was no longer used by amateurs.

At about this time, to escape the interference on the 200m band, amateurs began moving into the higher frequencies, and it was not long before it was discovered that much greater DX was possible on these frequencies. By 1924 the phenomenon of reflections from the ionosphere was understood, and intercontinental contacts were being made. Although the effect of sunspots was not known at the time, a sunspot peak occurred in 1925, and new records were made in DX working. Any country in the world could be reached on 40 or 20 metres, and DX was no longer measured in miles but rather in places (countries).

In April 1926 the American Radio Relay League (ARRL) began giving awards called WAC (Worked all Continents) to amateurs who made two-way contacts with all six continents. This was not easy to achieve at first, because there were few amateurs in Asia and South America but, by 1935, more than 1500 WAC certificates had been issued. Shortly after, the ARRL introduced the DX Century Club, membership of which was given to

amateurs who made two-way contact with 100 countries. This feat is very much more difficult than WAC obviously, and can be achieved only by very special effort. The WIA now has a similar award.

Amateurs who have worked 100 countries have not stopped there, and some have worked more than 350 countries. This requires extreme dedication. Amateurs have made new countries available by visiting countries where there are no amateurs and setting up stations there. They have also set up stations on small uninhabited islands away from the mainland to provide extra countries.

DX has always been a big feature of amateur radio. It is fascinating to find that you can communicate by voice or by code with random people on the other side of the world, and most amateurs have enjoyed working DX at some time. Because the majority of early radio amateurs were English speaking, English has become the common language of amateur radio. Amateurs speaking other languages can learn the few English words necessary to make contact by listening on the bands. This is most easy on CW, where an abbreviated language sometimes called CW English has developed, and it is interesting to hear, for example, a Spanish amateur using this language when in contact with a Russian.

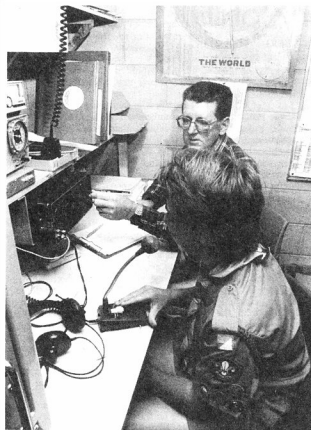
With DXCC scores at over 350 countries, there must be very few, if any, left, and now there is a new competition: the five-band DXCC — 100 countries on each of the five bands: 80, 40, 20, 15 and 10. **ar**

## KK3K and WB6LYI in OSCAR DXpedition

Lambda Amateur Radio Club President Jim Kelly KK3K of Philadelphia, PA and Vice-President Don Bledsoe WB6LYI of Long Beach, CA, will begin the first OSCAR operation next March from VP2E (Anguilla) and VP2V (the British West Indies). Their operating schedule for AMSAT OSCAR-13 runs 10-16 March 1992.

Don will begin the DXpedition operation from Anguilla as VPW3/WB6LYI during 10-13 March. Jim will operate as VP2V/KK3K from Tortola, 13-16 March. Neither of these DX countries has been on the air on OSCAR-13 before, so they anticipate there will be numerous stations attempting to work them when they come on the air, especially since they will be operating for such short periods of time at each DX location.

**ar**



Northern Corridor Radio Club member, Graeme Wilson VK6BSL helps out while Leon Young of the 1st Mullaloo Scout Group talks to fellow Scouts in Hobart, Tasmania, during last year's JOTA. Photo by the author.



Brownies from 1st Pinaroo Scout Group shown here with Bill Billington VK6UE were among the many Cubs, Scouts and Guides taking part in this year's JOTA. Photo by the author.

## Scouts on the Air

CLIFFORD YOUNG VK6ZIZ, PO Box 280, HILLARYS 6025

**M**EMBERS of Perth's Northern Corridor Radio Club were among the hundreds of radio amateurs around Australia who turned out in force to help in the recent Jamboree of the Air (JOTA).

One of the club's members, Graeme Wilson VK6BSL, spent more than seven hours helping local Scouts, Cubs and Guides to contact other Scout groups and amateur operators as far away as Texas. However most contacts were closer to home and included Queensland, Victoria, South Australia and Tasmania and also North and South Island, New Zealand.

Although Graeme concentrated on the HF bands, other members helped out on mobile and handheld VHF.

As in previous years, permission was given by DoTC to link repeater networks across Australia through the communications satellite, AUSSAT, over the JOTA weekend. This boosted VHF activity between the states and New Zealand considerably and radio amateurs taking part in JOTA weren't the only ones to take advantage of the opportunity.

Thanks must go to all those who helped make this year's JOTA a success. Events like this not only provide a useful service but also give wide exposure to amateur radio. Remember, many of today's operators first became interested in the hobby through events such as JOTA.

JOTA was held on the weekend of 19-20 October 1991.

## Editors Comment

(Continued from page 2)

Every new member makes things better for all the rest. It's positive feedback, either way, as I explained at some length in my November 1988 editorial entitled (would you believe?) "Positive Feedback". After 3-1/2 years I guess I can use the same word again!

And the fourth letter of comment? It was from my good friend and fellow "bureaucrat" Ron VK1RH. He was disappointed that last month's statistics were not a distillation of a magazine space usage survey by Graham Thornton late last year. There's time for that; perhaps next month?

Incidentally, reviewing my index to the 84 editorials I have written since 1984, I see that five contained the word "future" in the title. From here on, the words "feedback" and "future" are forbidden in the heading to these comments. Good words, but suffering a little from overwork! Does the same go for editors?

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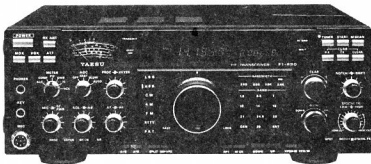


# YAESU FT-990 HF ALL-MODE TRANSCEIVER

Take a look at the all-new Yaesu FT-990 and you'll soon see the similarity to the top-of-the-line FT-1000... and for good reason. The incredible FT-990 embodies many of the advanced features and ease of operation of the FT-1000. But in a more compact, economical package that sports several new advances in both transmitter and receiver design.

Cat D-3220

**\$3295**



## Designed For Easy Operation

Just like the FT-1000, Yaesu have designed the FT-990 to be as easy as possible to operate. The front panel layout puts all frequently used controls right where they should be... at your fingertips. All controls are clearly labelled and the digital display provides an abundance of information in an uncluttered and easy to read format. The front panel keypad offers one-touch band selection (160m - 10m) with 2 independent VFOs per band and 90 memories that store the operating data held in both VFOs. You can't help but appreciate the large back-lit analogue meter rather than those confusing bar-graph meters found on other transceivers.

## Direct Digital Synthesis (DDS)

Two 10-bit DDS and a magnetic rotary encoder provide silky-smooth VFO tuning, pure local oscillator signals, and very fast Tx/Rx change-over... and that's very important for QSK CW and digital modes. The DDS is teamed with an extremely low-noise, high performance receiver front-end using a PIN-diode controlled push-pull RF amplifier followed by a quad-FET ring mixer. The result is a very wide receiver dynamic range from 100kHz to 30MHz. Transmitter signal purity is also enhanced, with circuit noise nearly 90dB down from the carrier.

## Unique Features

- Customizable RF Speech Processor - Yaesu's unique Frequency Shifted Processor (FSP) lets you shift the IF passband of your transmitted SSB signal to provide maximum punch with your voice/microphone combination.
- Digital Audio Filtering - Razor sharp audio filtering is available for tough SSB and CW reception conditions through the use of an astounding dual digital Switched Capacitance Filter (SCF) with independently adjustable selectivity skirts.
- Packet/RTTY - Separate interface jacks for a RTTY terminal unit and a Packet TNC are provided, while the mode selection buttons disable the mic automatically in the digital modes.

## Convenience Features

- A highly efficient AC switch-mode power supply is built-in! It allows high duty-cycle transmission while keeping the weight way down, saving space and the added expense of external power supplies.
- An in-built Automatic Antenna Tuner with 39 memories is standard!
- Modular construction maximizes selectivity and makes servicing easy.
- Effective interference rejection is facilitated by IF shift, IF notch, IF bandwidth and SCF audio controls.
- An adjustable noise blanker, a 500Hz B/W IF crystal filter and a comprehensive, easy to read user manual are also supplied.



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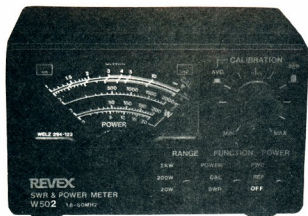


*It's On Again!*

## GOSFORD 1992 FIELD-DAY

**HURRY!** Don't miss Dick Smith Electronics at the annual C.C.A.R.C. Field Day, on the Central Coast. You'll find a comprehensive display of Yaesu transceivers and accessories, antennas, coax switches and lots more. Check out our incredible 'Show Specials' and ex-demo equipment. It's all priced to clear, so see you there!

**Where** — Showground Road, Gosford  
**When** — Sunday 23rd of February  
**Time** — Gates open 8am



## HF/6m POWER/SWR METER

A superb wideband SWR/Power meter which boasts quality Japanese construction and a truly accurate PEP metering circuit (unlike many 'other' so called PEP monitor systems). The Revex W502 features solid construction with an all-metal case and a large back-lit meter... and it covers the 1.8 to 60MHz range with less than 0.1dB insertion loss. With 20W, 200W and 2kW power ranges and LED indicators which show average or PEP operation.

Requires 13.8V DC @ 200mA power supply.

Cat D-1360

**\$199**

## DIAMOND D-130J DISCONE ANTENNA

This quality Japanese disccone antenna covers the frequency range 25-1300MHz, and was designed to be easy to assemble and install. The extensive use of stainless steel in the D-130J makes it very durable, while allowing transmission on the 6m, 2m, 70cm, and 23cm bands with a maximum power rating of 200W PEP. Comes complete with mast mounting hardware and instructions.

Cat D-4840



**\$169**

## ST-7500 2m/70cm MOBILE ANTENNA

At last, a high performance dualband mobile antenna at a down to earth price. The ST-7500 is just 1metre long and uses a ground independent design to provide high gain (3dB on 2m, 5.5dB on 70cm) with a maximum power rating of 150W. Quality Japanese construction together with a tiltable whip structure make this an ideal antenna for the discerning mobile operator. Requires SO-239 antenna base (D-4035 recommended).

Cat D-4810

**\$79<sup>95</sup>**

## DIAMOND VHF/UHF BASE STATION ANTENNAS

These high quality, vertically polarised base station antennas are ideal for the discerning Amateur operating on the 2m, 70cm or 23cm bands. They're beautifully constructed Diamond brand antennas from Japan which provide high gain for maximum range. Constructed from robust F.R.P. tubing for excellent all-weather operation, with ground-plane radials for a clean radiation pattern.

### 2m ANTENNA F23A

Frequency: 144 — 148MHz  
Gain: 7.8dB  
Max. Power: 200W  
Max. Wind Speed: 144km/h  
Length: 4.53m  
Type: 3 x 1/2"  $\lambda$ -co-linear  
Cat D-4850

**\$199**

### 2m/70cm ANTENNA X-200A

Frequency: 144 — 148MHz, 430 — 450MHz  
Gain: 6dB on 2m, 8dB on 70cm  
Max. Power: 200W  
Max. Wind Speed: 180km/h  
Length: 2.5m  
Type: 2 x 1/2"  $\lambda$ (2m), 4 x 1/2"  $\lambda$ (70cm)  
Cat D-4860

**\$199**

### 2m/70cm ANTENNA X-500A

Frequency: 144-148MHz, 432-450MHz  
Gain: 8.3dB on 2m, 11.7dB on 70cm  
Max. Power: 200W  
Max. Wind Speed: 144km/h  
Length: 5.2m  
Type: 2 x 1/2"  $\lambda$ (2m), 8 x 1/2"  $\lambda$ (70cm)  
Connector: N-type socket  
Cat D-4865

**\$279**

### 23cm ANTENNA F-1230A

Frequency: 1260 — 1300MHz  
Gain: 13.5dBi  
Max. Power: 100W  
Max. Wind Speed: 144km/h  
Length: 3.06m  
Type: 25 x 1/2"  $\lambda$ -co-linear  
Connector: N-type socket  
Cat D-4870

**\$239**

**Limited Stocks!**

## 2m 1/2 WAVE BASE STATION ANTENNA

—MOBILE ONE

An outstanding value for money, compact, Australian made base station antenna which is only 1.69m long. It uses a single section F.R.P. radome for excellent all-weather operation and covers 144-148MHz with less than 1.5:1 SWR. The antenna provides approximately 3dB gain with a maximum power handling of 200W FM. It's fitted with an SO-239 socket mounted into the base for easy coax connection and comes with a 5 year warranty.

Cat D-4820

**\$49<sup>95</sup>**



B1283/PB

# YOU'LL APPRECIATE THE QUALITY... YOU'LL LOVE THE PRICE!



## FT-747GX BUDGET H.F. TRANSCEIVER

The FT-747GX is a compact SSB/CW/AM and optional FM transceiver providing 100 watts of PEP output on all 1.8-30MHz amateur bands, and general coverage reception from 100kHz to 30MHz. Convenient features include a front panel mounted speaker and easy to read digital display, dual operator selectable tuning steps for each mode, dual VFO's for split frequency operation and 20 memory channels (eighteen of which can store split Tx/Rx frequencies). Wideband 6kHz AM, and narrow 500Hz CW IF filters are also fitted as a standard feature. Includes Yaesu MH-1 hand microphone. See ARA Review — Vol 11, Issue 11.

Cat D-2930

2 YEAR WARRANTY!

**\$1199**

## FT-212RH MOBILE 2m FM TRANSCEIVER



2 YEAR WARRANTY!

With 45 watts output over the 144-148MHz range, a rugged diecast chassis for superb RF isolation, extensive use of surface mount components, and a large back-lit LCD with bargraph P.O.S.-meter. The FT-212RH is an ideal mobile FM transceiver that also doubles as an easy to use base station. Features include 5 selectable tuning steps, a total of 21 memories (18 general purpose, one CALL-channel, and 2 sub-band limit memories for band scanning), inbuilt C.T.C.S.S. encode, as well as a variety of scanning functions. The FT-212RH comes with a mobile mounting bracket, convenient MH-14A microphone, and DC power lead.

Cat D-3494

**SUPER VALUE \$499**

## Our Most Rugged HF Mobile Transceiver! ALL MODE HF TRANSCEIVER FT-757GX II

Ready for action! Whether in a demanding H.F. mobile situation, or at home in the shack, the FT-757GX II won't let you down.

Based on its popular predecessor, it features the heavy duty diecast heatsink and rugged metal chassis of the earlier 757GX, but has been upgraded to offer a number of new features. These include...

- All mode operation — SSB, CW, AM, FM (160m-10m)
- 100 watt output on SSB, CW, FM (25W AM) at 100% duty cycle
- High performance general coverage receiver — 150kHz to 30MHz
- Dual VFO's with single button VFO/memory swap functions
- Memories store freq. and mode, plus provide band scanning.
- Inbuilt 600Hz CW IF filter, IF shift and IF notch filters, variable noise blanker, Speech Processor, iambic CW keyer, and SWR meter.
- Includes MH-1 hand microphone.

Cat D-3492

2 YEAR WARRANTY!

**SAVE \$100 \$1695**

## FT-4700RH 2m/70cm MOBILE FM TRANSCEIVER



2 YEAR WARRANTY!

Features 50 watts output on 2m, and 40 watts output on 70cm (430-450MHz), with Full-duplex crossband operation or dual-band reception modes, you can listen for calls on both bands simultaneously, or work someone on one band while listening on the other. The optional YSK-4700 extension cable allows the main body of the transceiver to be installed remotely, while the front panel mounts conveniently on the dashboard. The amber back-lit LCD shows both VHF and UHF frequencies and signal strengths, and all controls are back-lit for clear readability, with a dimmer switch for nighttime viewing. A total of 20 memories and 5 selectable tuning steps make frequency selection easy, while the advanced scanning features allow quick detection of signals on either, or both bands.

Cat D-3300

Cat D-3301 YSK-4700

extension cable \$49.95!

**\$899**

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# The Story of Stephen Frith

PART 3 - BY H KARL SAVILLE VK5AHK

## Introduction

**T**HE ESSENTIAL FEATURES OF any communication device for the disabled must be speed of access and ease of operation.

However, it is not easy to devise a quick communication system for a disabled person who cannot use his hands. I had been asked to help Stephen, but had no previous experience to fall back on and, as far as I knew at the time, there was little or no written information available. I had to experiment and work on any ideas that might come to me. And, out of this came the realisation that to help the severely disabled you have to spend a lot of time studying their capabilities and their reaction to the communication system you intend to use. The system should be made to suit the operator and not the operator made to suit the system.

## Access Methods

The Morse code is excellent for communication with a switch (key) but the operator must be able to send at a fair speed and with good rhythm. And, because the average person cannot read a Morse code message, a decoder is necessary for translation. The computer is ideal for this purpose but, unfortunately, Stephen's poor co-ordination and lack of timing skill make it impossible for him to use the system as it was intended.

As stated in Part 2 I used a scanning system to enable him to access the individual dots and dashes and assemble them until the required dots and dashes were ready to be printed and, although he used this system for several months, it proved to be too slow. It would take, for example, 20 seconds or more to print out the letter A. It was a time of experimentation and it did provide Stephen with a means of communication. Communication speed would be much faster when using phrases, however.

Comparison tests between the two systems showed that a straight scanning system was faster than the Morse code scanning system. To print out an A would take about six seconds with the normal scanning system, and it was time to make a change. And this would also provide a cleaner and clearer screen presentation, by removing the cursor and function items from the bottom of the screen.

I found that there are two main scanning methods of accessing and display-

ing characters on the display screen. There are possibly more, but I have come into contact with only two so far. For convenience I call the first one **scanning**, and the other **stepping**.

## Scanning

Scanning is, in this case, the sequential selection of an option from a list of options. Unfortunately, the more options there are the longer it takes to scan the whole list. If the options are the letters of the alphabet (and numbers), there will be a total of 36 options, and these are displayed in a list or grid pattern of six rows of six columns.

In addition to the characters, there are other very necessary options which must be included, such as:

- A **space** option to separate words.
- A **delete** option to remove wrong letters.

And a **menu** option so it is possible to leave the program and go to another.

Other options may have to be used as required, such as a printer etc.

## Presentation

In order to fit the extra options in a 6x6 grid we can use the capital letters I and O for I and O, thus leaving two spare spaces in the grid which can be used for the space and delete options.

The menu option can be accessed by returning the program to menu each time the space option is accessed. The printer option is accessed at the menu.

A cursor, an arrow character, moves, or scans down the left-hand side of the screen and pauses at each row of the display list in turn. Each row is identified by a buzz sound. One buzz for row 1, two for row 2, and so on. In this way the operator can keep track of each row even if he is distracted for some reason.

Table 1: Display List

→	Space	A	B	C	D	Delete
	E	F	G	H	I	J
	K	L	M	N	O	P
	Q	R	S	T	U	V
	W	X	Y	Z		
	4	5	6	7	8	9

I do not claim this as the best arrangement, but just one of a number of possible ways.

If the switch is activated while the cursor is indicating a row, the cursor changes direction and scans along the row, pausing for three seconds at each option. Pressing the switch, during the

pause period, will print out the indicated option, in oversized characters, in the lower half of the screen, or act accordingly in the case of space or delete.

On completion of an option the cursor returns to the top left-hand position.

## Stepping

The stepping system is the reverse of scanning in that the cursor is made to move by the switch and does not move by itself.

The stepping method is considerably faster than normal scanning, but it requires more skill and co-ordination from the operator. The cursor is initially stationary and sits above the display. When the switch is pressed and released the cursor steps down to the first row and, each time the switch is pressed and released the cursor steps down a further row. When the cursor reaches the required row, and if the switch is not pressed, the cursor will, after a pause of three seconds, print out the first option on that row. If the switch had been pressed before the pause time of three seconds had expired, the cursor would have stepped to the second option on that row, and so on.

With the stepping system, if the switch is not pressed before the pause time of three seconds, the option indicated by the cursor is carried out. If the operator can manage this method it is possible to select the most remote character on the display grid (the character 9) in about 12 seconds. This is assuming six moves down, three seconds wait to enter the bottom row, then six moves along and finally three seconds wait before printing out the figure 9. It would take 36 seconds to print out the same character using the scanning method.

If we assume the average time to access a letter for the scanning method is 36/2 = 18 seconds, a five-letter word would take about 70 seconds.

The stepping method average is 1/2 = 6, and this would give about 30 seconds for a five-letter word, or approximately two words a minute.

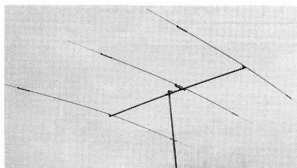
## The Switch

A lot of programming attention has to be made to get correct switch operation. In the scanning mode, the pause period is made by a count loop of 1000, which takes about three seconds, and on reaching

*Continued on Page 32*

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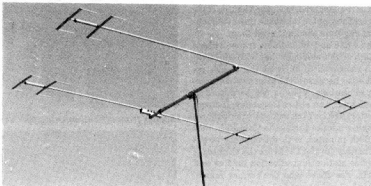
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# New Frequencies for VNG

MARION LEIBA VK1VNG, VK1BNG HONORARY SECRETARY VNG USERS CONSORTIUM  
26 FIMISTER CIRCUIT, KAMBAH ACT 2902

**A**USTRALIA'S STANDARD frequency and time signal service has undergone frequency changes. VNG ceased broadcasting on 15MHz at 0700 UTC on 6 May 1991. The aerial was modified and the transmitter tuned for 16MHz, and transmission on this new frequency started at 0000 UTC on 8 May 1991. The alterations to the frequency synthesiser and antenna were made by the staff at Llandilo.

VNG has also been licensed on 8.638 and 12.984MHz. These are on loan from the Royal Australian Navy and we are very grateful. It must be remembered, however, that the Navy reserves the right to take back these frequencies at any time should it need them.

The 8.638 and 12.984MHz transmissions are both double sideband, but with the bandwidth restricted to 3kHz at the Navy's request. Also, because of the international spectrum allocations, VNG is not permitted to transmit voice on either frequency. Instead, the letters VNG are transmitted in slow morse six times a minute during the 15th, 30th, 45th and 60th minutes, with a frequency of approximately 400Hz. These are the minutes of the voice station identification on five and 16MHz. For those who don't know morse, VNG is "... — — — —".

The frequency synthesisers for 8.638 and 12.984MHz were built in the geology department of the University of Tasmania in Hobart by Vagn Jensen VK7VJ, the director of the Tasmanian seismograph network. Vagn also designed the synthesisers.

VNG started transmitting on 8.638 and 12.984MHz at 0006 UTC on 3 July 1991, and transmission on 10MHz ceased on 2 July 1991. On 3 July, VNG was also officially opened by the chairman of the National standards Commission, Professor Julian Goldsmid. About 50 people from government organisations and the VNG Users Consortium attended the ceremony. The aerial used for the 5MHz transmission is a Wells quadrant. The other frequencies are radiated from delta-matched quadrants with a single strand of wire on each arm. Recent reception reports have been received from overseas on the three higher frequencies, with particularly enthusiastic comments on the 16MHz transmissions which have been those most commonly reported from around the world. Reception of 5MHz outside Australia and New Zealand is rarely mentioned nowadays, though reports on this frequency were received in 1988-89 when it was VNG's only transmission.

VNG's transmission schedule is: 5.000MHz,



*Scenes from official opening of VNG in transmitter hall at Llandilo, 3 July 1991.*



*Vagn Jensen VK7VJ arriving Llandilo with the frequency synthesiser for 8.638 and 12.984MHz on 1 July 1991.*

8.638MHz, 12.984MHz: continuous;  
16.000MHz: 2200-1000 UTC.

The power is: 5.000 and 8.638MHz: 10kW;  
12.984MHz: 3kW; 16.000MHz: 5kW.

**Location:** International Transmitting Station, Civil Aviation Authority, Llandilo, New South Wales, Australia, 33 42 52 S, 150 47 33 E.

**Transmitters:** STC HF broadcast transmitters. The VNG transmitters and standard frequency and time signal equipment are owned by the National Standards Commission.

**Emission:** Double-sideband full-carrier amplitude modulation 5.000 and 16.000MHz: 6K00B9W; 8.638 and 12.984MHz: 3K00A1A.

**Licensed Power:** 5.000, 8.638 and 12.984MHz: 10 kW; 16.000MHz: 5 kW.

**Power in Use:** 5.000 and 8.638MHz: 6 kW; 12.984MHz: 3 kW; 16.000MHz: 5 kW.

**Aerials:** 5MHz is radiated from a Wells quadrant aerial. 8.638, 12.984 and 16MHz are radiated from delta-matched quadrant aerials with a single strand of wire on each arm.

**Transmission Schedule:** 5.000, 8.638, 12.984MHz: continuous; 16.000MHz: 2200-1000 UTC.

**Frequency Loan:** 8.638 and 12.984MHz are on loan from the Royal Australian Navy.

**Voice Station Identification Announcement—Broadcast on 5 and 16MHz only:** Given during the 15th, 30th, 45th and

*Continued on Page 32*

# Australian Beacons



# List of Acronyms

## Amendments and Additions

Many letter combinations have been used in *Amateur Radio* and elsewhere for many years, sometimes without explanation. To dispense the fog, we published a list in February 1991 (p27-32). It contained a few errors and also left out some well-known acronyms. You may like to update your original list by inserting the following alterations.

Amend 1991 list as follows:

AAIRPC "Postcode" not "Postcode"  
ARICOT The word "Club" has been omitted (after "Radio")  
S-MAC "Satellite" not "satellite"  
GGA "Graphic" not "Graphic"  
JMFD "John" not "Joyn"

MF "MHz" not "Mhz"  
PCA "Closest" not "Closest"  
RED Should be REF  
SECAM "Memoir" not "Memorie"  
SELCAL Delete last L (ie not SELCALL)  
SRJ "Sevez" not "Seave"  
TRAC Close bracket after "Turkey"  
UTC "Universe" not "Univorsat"  
Add to 1991 list as follows  
after "Air Officer Commanding" add "Aeronautical  
Operational Control"  
ATC Air Traffic Control (after ASEAN)

DME Distance Measuring Equipment (after DMA)  
EBU European Broadcasting Union (after EARS)  
GPS Global Positioning System (after GOES)  
ICAO International Civil Aviation Organisation (after IC)  
MDCC Mountbatten & District Radio Club (after MCW)  
PROM Programmable read only memory (after PNGARS)  
SARL (also Sarawak)  
SARSAT Satellite Aided Rescue Satellite (after SARL)  
TVRO Television Receive Only (after TVI)  
TWT Travelling Wave Tube  
VOR VHF Omnidirectional Range (after VOA)

# Stolen Equipment Register

The Stolen Equipment Register is one of many services offered to members by the Wireless Institute of Australia. It has now been in operation since 1980, and is maintained on a computer database in the Executive Office. At regular intervals, updates of the complete list, sorted into categories of: Equipment Manufacturer/Model, Owner, Date Stolen are distributed to each Division. Members wanting to take advantage of the

register, either to publicise the theft of their equipment or to check equipment they are about to purchase, may contact their Division, or write or telephone the Executive Office. Any telephone reports of stolen equipment must be followed immediately by written confirmation of the details. For maximum efficiency, these details should include: Manufacturer's name; model; type of equipment; serial number; date stolen; owner's name,

address and call sign; any distinguishing features or modifications; police contact (if any). When equipment is recovered, it is important that you advise the Executive Office as soon as practicable. This list is the most up-to-date information we have at the time of going to press, but is based entirely on information received from you, the member. Would all readers please check this list and immediately advise if there are any amendments.

MFR	MODEL	DESCRIPTION	SERIAL NUMBER	OWNER	DATE	COMMENT
AEA	PAK1ATT	MULTIMODE TNC	13092	VK3XBE	28.07.91	STOLEN
ALINDO	ALD24T	2M70CM MOBILE RIG	10107310	VK3TJ	21.01.91	
AZDEN	PCS-3000	2M FM MOBILE	36738	VK3KCV	01.06.87	DIPLEXER FITTED 2 ANTENNA CABLES
BELCON	LS-202E	2M MAMODE R/H/HD	401992	VK3YYD	07.11.90	NO MICROPHONE - NO BRACKET
BWD	804	CD-10MHZ SCOPE	51767	VK2ZTW	11.01.90	
COMMODORE	ISA II	DISK DRIVE		VK5ALF	03.04.91	ENGRAVED L.E.P.A.R.C.
	64	COMPUTER		VK5ALF	03.04.91	ENGRAVED L.E.P.A.R.C.
DAWA	2M 70 CM	CROSSNEEDLE SWR MTR		VK3XBE	28.07.91	
	CM482A	SHRPOWER METER		VK2DQP	18.09.91	
	CNW-419	ANTENNA TUNER		VK3XBE	28.07.91	
DICK SMITH		AUDIO GENERATOR		VK2KJC	15.05.85	
	EXPLORER	70CM FM TRANSCIVER		VK2KJR	24.09.84	EXTENSIVE MODIFICATIONS
	T-2000	SOLDERING STATION		VK2DQP	18.09.91	
DRAKE	TR-7	HF TRANSCIVER	2333	VK2AML	18.05.90	OWNERS NAMES ENGRAVED
DRESSLER	EVV2000	2M PRE-AMP	1027	VK2XJC	15.05.85	
ELECTROPHONE	TX470T	UHF TRANSCIVER	50500072	VK2DQP	11.04.87	
EMTRONICS		NOISE BRIDGE	EM342	VK4AAE	27.10.89	
GALAXY	S	HF TRANSCIVER	5672V2118	VK3UB	06.06.87	REMOTE VFO
		SPEAKER MIC	5303V1309	VK3UB	06.06.87	REMOTE VFO
GCGL	GV-16	2 M FM HANDHELD		VK3JDO	17.11.89	WITH ANTENNA
GME	TX472S	40 CH UHF T/CIVER	912 48058	VK3LFF	14.06.90	
	TX430	40 CH AM CB	8770556	VK4IS	15.06.90	
GOODWILL	GFC2005F	DIGITAL FREQ COUNTER	2020452	VK2IT	07.08.91	
HOME BREW		ANTENNA TUNING UNIT		VK2DQP	18.09.91	
		ELECTRON MORSE KEYS		VK2DQP	18.09.91	
ICOM	HM4G	HF TRANSCIVER	23186	VK2FZH	09.06.89	WITH BP3 AND BC25E
	IC22A	2M FM HANDHELD	29906249	VK57GB	18.12.89	
	IC22AT	2 M FM HAND	40607030	VK2QJ	08.10.91	
	IC244	70 CM FM HANDHELD		VK57GB	18.12.89	
	IC2171A		001398	VK3XBE	28.07.91	
	IC202	2M SSB TRANSCIVER	5144	VK4ZSH	03.09.85	
	IC202	2M SSB TRANSCIVER	03482	VK3LFF	11.08.87	
	IC202	2M SSB TRANSCIVER	41013616	VK3ZBI	01.10.85	
	IC211	2M MAMODE T/CIVER	6804309	VK3BRV	17.10.84	
	IC211	2 M TRANSCIVER		VK2IT	07.08.91	WITH MICROPHONE
	IC215	2M FM PORT T/CIVER	05156	VK3LFF	18.09.89	
	IC22	2M FM TRANSCIVER	12266	VK3LFF	29.04.85	
	IC22	2M FM TRANSCIVER	12467	VK1TR	06.02.90	NO POWER FLUID/LAMP UNUSUAL
	IC22	2M FM TRANSCIVER	10018	VK3DQ	08.02.90	
	IC22A	2M FM TRANSCIVER	FALLEN OFF	VK3VY	21.06.87	EARLY MODEL - 22 CHANNELS
	IC22A	2M FM TRANSCIVER	8653	VK3ZU	03.05.84	
	IC22A	2M FM TRANSCIVER	3402112	VK2ZD	01.07.87	
	IC22A	2M FM TRANSCIVER	1914	VK4ZSH	03.09.85	
	IC22S	2M FM TRANSCIVER	11912	VK2ETJ	06.03.88	PRE-AMP, SOCKET
	IC22S	2M FM TRANSCIVER	14957	VK3DYZ	11.09.84	DIGITAL READOUT
	IC22S	2M FM TRANSCIVER	075710	VK3GJA	14.12.87	
	IC22S	2M FM TRANSCIVER	15674	VK2CIB	11.02.89	
	IC22S	2M FM TRANSCIVER	14727	VK3ME	14.08.85	
	IC25A	VHF TRANSCIVER	10309425	VK3LFF	14.06.90	
	IC271A	2M FM TRANSCIVER	03831	VK2DPM	04.11.84	VFO MODIFIED
	IC271A	2M ALL MODE TRCVER	27402603	VK3XBE	28.07.91	
	IC290	TRANSCIVER	02592	VK2BWW	30.03.88	
	IC290A	ALL MODE TRANSCIVER	001532	VK3VFA	00.11.90	
	IC290H	ALL MODE TRANSCIVER	17701965	VK3ZBI	01.10.85	
	IC290H	ALL MODE TRANSCIVER	17703342	EMTRONICS	17.02.86	VINYL CASE
	IC2A	2M FM HANDHELD	12213837	VK5ABY	22.12.85	
	IC2A	2M FM HANDHELD	12209700	VK2AHF	08.09.87	

	IC2A	2M FM HANDHELD	12213830	VK3YOD	02.12.83	SPARE BATTERY PACK
	IC2A	2M FM HANDHELD	29901052	VK2CKD	05.02.86	
	IC2GAT	2M FM HANDHELD	08616	VK3KLD	17.11.89	WITH BP70, BC36, BPSA X 2
	IC3200	2M70CM TRANSCEIVER	01048	VK2JMB	02.08.87	
	IC45A	70CM FM TRANSCEIVER	18351005	VK3KJC	22.02.84	MEMORY BACKUP UNIT
	IC45A	70CM FM TRANSCEIVER	01876	VK2DPM	04.11.84	-
	IC490A	70CM TRANSCEIVER	28601900	VK3XBE	28.07.91	-
	IC490A	70CM TRANSCEIVER	16101192	VK3BVO	01.03.83	-
	IC4E	70CM HH TRANSCEIVER	18103021	VK3YOD	02.12.83	SPARE BATTERY PACK
	IC4E	70CM HH TRANSCEIVER		VK2KZZ	16.06.87	CALLSIGN ENGRAVED
	IC502	6M SSB TRANSCEIVER	00018	VK4ZSH	11.08.87	
	IC551	6M ALL MODE T/CEIVER	01273	VK4ZSH	03.09.85	INCLUDING FM, VOX
	IC551	6M ALL MODE T/CEIVER	9401253	VK3ZBH	01.10.85	-
	IC551D	6M TRANSCEIVER	99003878	VK3YSG	01.01.84	-
	IC560	6M TRANSCEIVER	01153	VK3YSG	02.12.83	ENGRAVED SECURITY NO. T-00510
	IC560	6 M TRANSCEIVER	02057	VK2IT	07.08.91	WITH MICROPHONE
	IC701	HF TRANSCEIVER	8001039	VK2JMB	15.02.88	-
	IC701PS	POWER SUPPLY	7800978	VK2777	15.02.88	-
	IC720A	HF TRANSCEIVER	06242	VK4ZSH	03.09.85	-
	IC721	HF TRANSCEIVER	003663	A. WOJNAR	02.07.90	TRANSCIVES ALL RFDS FREQUENCIES
	IC730	HF TRANSCEIVER	13007078	MEB 10 UNV	12.12.88	HOMC BREW POWER SUPPLY
	IC735	HF TRANSCEIVER	36304455	EMITRONICS	17.02.80	-
	IC745	HF TRANSCEIVER		VK3XBE	28.07.91	-
	ICP520	POWER SUPPLY	10101968	VK3YSG	01.01.84	-
	ICR70	COMMS RECEIVER	18503539	VK3XBE	28.07.91	-
	ICR7000	COMMS RECEIVER	002670	VK3XBE	28.07.91	-
	PS30	POWER SUPPLY	20302017	VK3XBE	28.07.91	-
	SAB	DESK MIC/PHONE	20507750	VK3XBE	28.07.91	-
KDK	2025 MK II	2M TRANSCEIVER		VK2ETJ	06.03.80	
	FM2025 MK 2	2M FM TRANSCEIVER	A5020	VK2AML	03.07.88	DEFUNCT FINAL
	MULTI 7	309 VFO		VK3ZBH	09.02.88	SHARPE MICROPHONE
KENWOOD	309 VFO	VFO TO SUIT TR7200G	440108	VK5ALE	03.04.91	DRIVERS LICENCE NO. ENGRAVED
	AT180	ANTENNA TUNER	0020450	VK2777	11.11.87	-
	AT200	ANTENNA TUNER	8520049	VK2DCB	16.08.84	-
	DC5	DIGITAL DISPLAY	730445	VK2DCB	16.08.84	-
	DM81	GRID DIP OSCILLATOR	4020163	VK2KLF	10.06.89	STENCILLED IN 20MM BRIGHT YELLOW
	LF-30A	LOW PASS FILTER	-	VK2ADP	16.09.91	-
	MC-50	MICROPHONE		VK2DCP	16.09.91	-
	MC-50	DESK MICROPHONE	N/A	VK5ABY	22.12.80	-
	MS1	MOBILE MOUNT	-	VK5BJA	30.05.89	-
	PS430	POWER SUPPLY	-	VK3CLV	16.12.91	-
	SMC2C	HYELED MIC & SPEAKER	-	VK2PRK	25.07.91	-
	SP520	SPEAKER		VK2DCB	16.08.84	-
	TM201B	VHF TRANSCEIVER	7016111E	VK3CLV	16.12.91	-
	TM221A	2M FM TRANSCEIVER	8110722	VK2DCB	16.08.84	-
	TM221A	2M FM TRANSCEIVER	8022541	VK3ZJY	11.06.87	-
	TM231A	2M FM TRANSCEIVER	0051018	VK4IS	27.07.90	-
	TM441A	432 MHZ FM TRANS	6070370	VK4IS	27.07.90	-
	TR2400	2M FM HANDHELD	0001950	VK2DPM	28.06.84	-
	TR2400	2M FM HANDHELD	0001926	VK2PJ	20.04.85	CALLSIGN ENGRAVED
	TR2500	2M FM HANDHELD	3004009	VK2ZCQ	29.05.85	MICROPHONE AND CHARGER
	TR2500	2M FM HANDHELD	3003345	VK2DYW	18.02.87	-
	TR2600A	2M HANDHELD	7030631	VK5AAR	03.10.86	-
	TR2600A	2M HANDHELD TCVER	5060034	VK2KLF	10.06.89	MISSING HAND STRAP
	TR2600A	2M HANDHELD	5060035	VK5BJA	30.05.89	INCLUDING RUBBER DUCK ANTENNA
	TR7200G	2M TRANSCEIVER	111048	VK5ALE	03.04.91	-
	TR751A	2M ALL MODE T/CEIVER	7050512	VK3QAJ	25.02.90	GREY MIC - DCL MODEM BOARD
	TR7550	2M FM H/HELD TCIVER	200800	VK2DED	06.03.84	"N" CONNECTOR
	TR7550	2M FM H/HELD T/CEIVER	M 201061	VK2AEM	02.08.87	-
	TR7550	2M FM H/HELD T/CEIVER	1111125	VK2CCK	07.02.86	-
	TR7950	2M FM TRANSCEIVER	4010747	VK2TVG	08.06.85	-
	TR9000	2M ALL MODE T/CEIVER	1030187	VK3JBT	10.03.87	ADDITIONAL MEMORY SWITCH
	TR9000	2M ALL MODE T/CEIVER	1050780	VK3YSG	01.01.84	-
	TS120S	HF TRANSCEIVER	950818	VK2777	11.11.87	-
	TS120V	HF TRANSCEIVER	0061224600	VK2VYV	03.05.85	MT35 MICROPHONE
	TS130S	HF SSB TRANSCEIVER	1090128	VK2VYV	03.05.85	-
	TS130S	HF TRANSCEIVER	40401CB	VK2BWW	30.03.88	-
	TS130SE	HF TRANSCEIVER	2006697	VK2AHJ	03.01.87	-
	TS430S	HF TRANSCEIVER	4010322	VK2XJC	15.05.85	INCLUDING FM FILTER
	TS440S	HF TRANSCEIVER	0060078	VK2FIT	01.07.90	-
	TS440S	HF TRANSCEIVER	7092071	VK2FIT	24.10.89	WITH PS50 PSU & MC85 DESK MIC
	TS440S	HF TRANSCEIVER	0101192	VK3NKG	14.10.90	STOLEN FROM VEHICLE IN PERTH
	TS440S	HF TRANSCEIVER	7031310	VK6ID	25.08.91	-
	TS440S	HF TRANSCEIVER	R 7060309	VK3CLV	16.12.91	SP40 SP50 EXTERNAL SPEAKERS
	TS520	HF TRANSCEIVER	010296	VK2ZCQ	11.01.90	-
	TS520S	HF TRANSCEIVER	820972	VK2DCB	16.08.84	-
	TS520S	HF TRANSCEIVER	?	VK2FZH	09.06.89	STICKER FROM "TURKEY RADIO"
	TS520SE	HF TRANSCEIVER	8650	VK5ALE	03.04.91	-
	TS670	6M & 70CM TRANSCEIVER	?	VK2ZCQ	28.06.90	-
	TS700A	2M ALL MODE T/CEIVER	350409	VK3ZJY	11.08.87	-
	TS830S	HF TRANSCEIVER	3050176	VK7JG	13.01.83	-
	TV506	6M CONVERTER	720069	VK2ZCQ	11.01.90	-
	VFC22D	EXTERNAL VFO		VK2DCB	16.08.84	-
KING AIR	AIRCRAFT BAN	TRANSCEIVER		VK6ID	25.08.91	-
KYOKUTO	FM144	VHF FM TRANSCEIVER	8296	VK2ZCQ	11.01.90	CALLSIGN ENGRAVED
KYOTO	FM144-10	2M FM TRANSCEIVER	520284	VK2KLF	10.06.89	-
LEADER	LSG11	SIGNAL GENERATOR	0041244	VK3KJC	14.12.87	-
	LSG18	SIGNAL GENERATOR	1081098	VK3YSG	01.01.84	MISC BITS ALSO
MWAVE MODULE	MM4L-432-50	70 CM SOW AMPLIFIER	-	VK3XBE	28.07.91	-
MIRAGE	40W-144 MHZ	2M LINEAR AMPLIFIER	-	VK2ZCQ	11.01.90	-
		2M 150W AMPLIFIER	-	VK3XBE	28.07.91	-
PACCOM	DR200	2M 60W AMPLIFIER	2231	VK3XBE	28.07.91	RELAY IN BOX IN DC SUPPLY LINE
PACCOM	TINY 2	DUAL PORT TNC	TS359	VK2PRK	27.05.91	WITH MANUAL
PHILIPS	323	TNC		VK5ALE	03.04.91	2 OFF CH 17 AND 20
	FM321	70CM FM TRANSCEIVER	156	VK6ID	27.08.91	WITH MICROPHONE
	SKA	UHF CB HANDHELD		VK6ID	25.08.91	2 OFF CH 17 AND 20
PHILLIPS	828	2M FM TRANSCEIVER	44982	VK4IS	15.08.90	10 CHANNELS - 3 FITTED
PRESIDENT	FM828	VHF TRANSCEIVER		VK5ALE	03.04.91	1 CHANNEL 147.575
REALISTIC	HR2510	HF TX MOD FOR CB	95000177	F CAMBRIACHAL	05.91.00	SCOTCHESRD POWER CORD
		SCANNING RECEIVER		VK6ID	25.08.91	BNC SOCKET
	AX190	HF RECEIVER	500111	VK3KJA	14.12.87	-
	SP190	HF RECEIVER	20-5191	VK3KJA	14.12.87	-
	HX2000	SPEAKER ENCLOSURE		DSE VIC	13.05.85	-
SAIKO	SC7000	SCANNER		VK2ZJC	15.05.85	BNC ANTENNA SOCKET
SONY	2001D	COMMUNICATIONS RECVR	?	VK2FZH	09.06.89	BROKEN ANTENNA
STANDARD	CS20	40 & 70 CM HANDHELD	F140629	ANDRWS COMM	18.02.85	STOLEN AT GOSFORD FIELD DAY
STC	MT36	SWR BRIDGE		VK2RDX	27.05.91	-
	MTR25 191B	VHF TRANSCEIVER		VK2RDX	27.05.91	CTCSS AND TIMER UNITS FITTED
	MTR25 191D	UHF TRANSCEIVER		VK2RDX	27.05.91	CTCSS AND TIMER UNITS FITTED
SWAN	WB40	40 M MICABLE T/CEIVER	16471	VK2IT	07.08.91	-
TELEQUIPT	SS1	OSCILLOSCOPE		VK4AAE	27.10.89	-

TEMPO	1S	2M HANDHELD	012240	VK3JB	06.06.87	-
THORN		B&W TV	102512	VK2JJC	15.05.85	MOD FOR COMPUTER
TOKYO	HL80V	2M POWER AMPLIFIER	829331	VK2JJC	15.05.85	-
	HL88V	6M POWER AMPLIFIER	819595	VK2JJC	15.05.85	-
	HL90U	70CM POWER AMP	8304246	VK2JJC	15.05.85	-
TONO	THETA 550	KEYBOARD TERMINAL	821485	VK3XBE	28.07.91	-
TRIO	CS1560A2	CRO	10-20171	VK3YSG	01.01.84	-
VIBROPLEX	2020	HF TRANSCEIVER	50266009	VK2KSY	16.09.85	-
WELZ		MORSE KEY	-	VK2DQP	16.09.91	-
YAESU	SP200	SWR/PWR METER	600384	VK2JJC	15.05.85	-
	FAS14R	REMOTE ANT SEL	140138	VK3KJA	14.12.87	-
	FC707	ANTENNA TUNER	11140775	VK2DBB	28.04.86	-
	FC707	ANTENNA TUNER	18A4085	VK4AAE	27.10.89	-
	FC707	ANTENNA TUNER	11140765	VK3DHY	01.06.87	-
	FC707	ANTENNA TUNER	1L170086	VK2CFC	06.09.91	-
	FL2010	2M LINEAR AMPLIFIER	1L031300	VK3DKO	25.08.88	MOUNTED IN CRADLE
	FP707	POWER SUPPLY	4C050487	VK4AAE	27.10.89	-
	FP707	12V 20 AMP P/SUPPLY	1H120548	VK5ABY	22.12.86	-
	FP707	POWER SUPPLY	1L150596	VK2CFC	06.09.91	-
	FRA7700	ACTIVE ANTENNA	2H405293	VK2777	11.11.87	-
	FRG7	HF RECEIVER	299L26099	VK3ZLY	28.07.83	-
	FRG7	HF RECEIVER	8H4210862	VK2IT	07.08.91	-
	FRG7700	RECEIVER	2K210752	VK2777	11.11.87	-
	FRG7700	RECEIVER	3M285093	VK2XPU	01.08.89	-
	FRG9200	SCANNING RECEIVER	5 N 130767	DICK SMITH	01.11.91	STOLEN FROM BENDIGO VIC STORE
	FRT7700	ANTENNA TUNER	2K070479	VK2777	11.11.87	-
	FT101B	HF TRANSCEIVER	83L102373	VK3KJA	14.12.87	-
	FT101B	HF TRANSCEIVER	320376	VK2IT	07.08.91	WITH DESK MICROPHONE
	FT101E	HF TRANSCEIVER	6G350263	VK2SS	29.06.84	-
	FT101E	HF TRANSCEIVER	7K201042	VK5EJZ	08.07.89	-
	FT101E	HF TRANSCEIVER	8L370414	VK3DYZ	11.09.84	-
	FT101E	HF TRANSCEIVER	8J61432	VK2DQP	16.09.91	-
	FT102	HF TRANSCEIVER	3K090835	VK2FLM	23.12.90	ENGRAVED NO B2075 YM-36 MIC
	FT107M	HF TRANSCEIVER	11110012	VK2ALN	03.03.87	-
	FT200	HF TRANSCEIVER	2K332252	VK3DYZ	11.09.84	-
	FT207R	2M HANDHELD	10132704	VK2ITJ	06.03.88	-
	FT207R	2M FM HANDHELD	10132725	VK2EMC	04.03.85	BATTERY COVER MISSING
	FT208R	2M FM HANDHELD	3K350964	VK2CBA	30.07.85	-
	FT208R	2M FM HANDHELD	4E382078	VK2PJ	29.03.89	FAULTY VCO
	FT208R	2M HANDHELD TRCVR		VK3XBE	28.07.91	-
	FT209R	2M FM HANDHELD	4L05245	DSE VIC	13.05.85	-
	FT209RH	2M FM HANDHELD	4K052638	VK3CE	01.01.85	BLUE VINYL CASE
	FT209RH	2M FM HANDHELD	5K190401	VK2HW	21.02.86	LEATHER CASE
	FT212RH	2 M TRANSCEIVER	IC630020	VK2XMM	01.07.91	-
	FT224		6G307290	VK3CV	28.05.87	-
	FT230	2M FM TRANSCEIVER		VK2EQD	18.08.87	-
	FT230R	2M FM TRANSCEIVER	4H081794	DSE VIC	13.05.85	-
	FT23R	2M FM HANDHELD	0C071763	DSE BOX HILL	18.09.91	-
	FT290R	2M FM TRANSCEIVER	2D100942	VK3DKO	25.08.88	CALLSIGN ENGRAVED
	FT290R	2M FM TRANSCEIVER	5G450018	VK7HW	18.04.86	MOBILE BRACKET
	FT290R	2M FM TRANSCEIVER	4E360554	VK3KGH	01.06.85	VINYL CASE
	FT290R	2M FM TRANSCEIVER	3C280713	VK2EQD	12.11.86	-
	FT290R	2M FM TRANSCEIVER	1L361321	VK3KJC	22.02.84	-
	FT290R	2M FM TRANSCEIVER	SF 280702	VK4AAE	27.10.89	COMPLETE WITH NICADS
	FT290R	2M FM TRANSCEIVER	1M081340	VK2VE	04.01.87	OWNERS NAME
	FT470	DUAL BAND HAND HELD	9L150788	DICK SMITH	31.08.90	STOLEN FROM BOURKE ST MELB STORE
	FT4700PH	VHF/UHF TRANSCEIVER	9C212240	VK3EMJ	16.07.91	NO MICROPHONE OR POWER LEAD
	FT480R	2M ALL MODE T/CEIVER	1H12069	VK1ZUR	29.05.84	-
	FT520	6M TRANSCEIVER	010489	VK4ZSH	03.09.85	-
	FT680R	HF TRANSCEIVER	3H080202	VK2JJC	15.05.85	-
	FT7	HF TRANSCEIVER	8K110846	VK2IV	04.11.88	DIAL ILLUMINATION MODIFICATION
	FT7	HF TRANSCEIVER	8I090728	VK2KSY	16.09.85	-
	FT7	HF TRANSCEIVER	8I090839	VK3BYK	28.06.83	-
	FT7	HF TRANSCEIVER	-	VK2PRK	25.07.91	ID "NSW 718610" ENGRAVED ON BACK
	FT707	HF TRANSCEIVER	-	VK4AAE	27.10.89	-
	FT707	HF TRANSCEIVER	1D161414	VK3DHY	01.06.87	-
	FT708R	70CMS FM HANDHELD	2J181463	VK2PJ	29.03.89	-
	FT708R	70CM FM HANDHELD	1H010948	VK2PJ	29.03.89	CALLSIGN ENGRAVED
	FT757GX	T/CEV & YK38 MIC	3K040371	VK2DBB	28.04.86	CALL SIGN ENGRAVED
	FT757GX	MONITORSCOPE	4H117185	VK2CFC	06.09.91	RF AMP NOISY - REQUIRES SERVICE
	FT780R	70CM TRANSCEIVER	1L061618	VK3ZBI	01.10.85	-
	FT780R	70CM TRANSCEIVER	3F070521	VK2JJC	15.05.85	-
	FV101	EXTERNAL VFO	1E353	VK3KJA	14.12.87	-
	FV707DM	EXTERNAL DIGITAL VFO	0L060097	VK4AAE	27.10.89	-
	Y901P	MONITORSCOPE	9L030072	VK1ZUR	15.12.84	INCLUDING MODULES
	YC355D	200MHZ FREQ COUNTER		VK2ZOW	11.01.90	-
	YP150	DUMMY LOAD/PWR METER		VK3XBE	28.07.91	-
	YV150	DUMMY LOAD	81090409	VK2DCB	16.06.84	-

## Band Plans

HF band plans are as in the 1992 Australian Radio Amateur Call Book. VHF band Plans have minor changes due to adoption of new 50 MHz beacon policy last October.

On 50 MHz, beacon frequencies within the DX window (50.05 - 50.200 MHz) are reserved for use within the eastern states. Beacons in VK5, VK6 and VK8 may operate below 50.05 MHz, or in the beacon segment beginning at 50.250 MHz. At 50 MHz, beacon spacing may be as close as 1 kHz. See AR December 1991 pp 45 - 46.

# Australia Repeater Listing

This list has been updated with information supplied by Divisions, repeater groups and individuals. Please send any additions or corrections to the Chairman, VWA Federal Technical Advisory Committee, PO Box 300, Caulfield South, Vic 3162.

## LEGEND:

Status:	O	operating	T	testing	P	planned ?	unknown
ERP:	A	licence application pending		HASL:	L	licensed but not currently on air	
Time:		Effective radiated power (watts)		SP:	H	Height above sea level (metres)	
Note:		Timeout in minutes				Sponsor or licensee	
		See footnotes at the end of the listing.					

## Voice Repeaters - 10 Metre Band

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
29.620	29.520	VK2RUW	Wollongong	O	50	771	5.0	NIL
29.620	29.520	VK5RLZ	Adelaide	L	50	62		SEL
29.640	29.540	VK2RHF	Melbourne	O		600	2.5	VTF(15)
29.650	29.550	VK4RCC	NEW Brisbane	P	10		3.0	QCQ(27)
29.680	29.580	VK6RHF	Perth	P				WRG

## Voice Repeaters - 6 Metre Band

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
53.550	52.550	VK2RAY	Albury	P				NTC
53.550	52.550	VK2RIS	Lismore-Casino	P				NSU
53.550	52.550	VK2RSJ	Sydney West	A				NSJ
53.575	52.575	VK2RUB	Illawarra	P				NJB

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
53.575	52.575	VK2RTM	Tamworth	P				NTM
53.625	52.625	VK2RNS	Newcastle	O		400		NAU
53.675	52.675	VK2RMB	Sydney	P		150		NMW
53.850	52.850	VK2RWI	Sydney	L	10	420	3.5	NWI

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
53.550	52.550	VK3RMH	Melbourne	O				VNE
53.575	52.575	VK3RDO	Dandenong	O				VGG
53.875	52.875	VK3RTN	Melbourne	O	25	1500	2.5	VSG(1)
53.900	52.900	VK3RMS	Melbourne	O	60	600	2.5	VWI
53.975	52.975	VK3RGM	Mansfield	O	25	1800	2.5	VSG(5)

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
53.725	52.725	VK4RGA	Central Old	L	25	1010	5.0	QGL
53.725	53.125	VK4RAF	Calms	P		480		QDR
53.775	52.775	VK4RAK	Mackay	T	15	330		QTW

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
53.800	52.800	VK6RTH	Perth	O	10	230	4.0	WRG(10)
53.825	52.825	VK7RMD	NW Tasmania	T	30	600	5.0	TNA

## Voice Repeaters - 2 Metre Band

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
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Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
146.525	146.025	VK2RBB	Byron Bay	O	10	150	3.0	NSU
146.525	146.025	VK2RLD	SW Sydney	O	10	330	4.5	NLI
146.550	146.050	VK2RCH	Calms Harbour	O		300	3.0	NCJ
146.550	146.050	VK2RDX	W Blue Mtns	O	50	1362	3.5	NSG
146.650	146.050	VK2RMI	Inverell	O	10	660	4.0	NNW
146.675	146.075	VK2RCV	Grafton	O	30	110	3.0	NSU
146.700	146.100	VK2RAQ	Orange	O	50	1417	3.0	NOA
146.700	146.100	VK2RMJ	Ulladulla	O	35	152	2.5	NMS
146.700	146.100	VK2RPM	Port Macquarie	O	50	552	3.5	NOX
146.725	146.125	VK2RAG	Gooford	O	40	318	3.0	NOR
146.750	146.150	VK2RFS	Far South Coast	O	10	870	3.5	NFS
146.750	146.150	VK2RTM	Tamworth	O	20	1430	3.0	NTU
146.750	146.150	VK2RHW	Wagga	O	25	490	3.0	NWG
146.775	146.175	VK2RZT	Newcastle	O	10	400	3.0	NWE
146.800	146.200	VK2RCC	Coonabarabran	O	60	1100	3.5	NOR
146.800	146.200	VK2RIC	Lismore	O	15	85	3.0	NSU
146.800	146.200	VK2RLE	Sydney	O	100	240	3.5	NSG
146.800	146.200	VK2RTD	Tumut	O	36	930	4.0	NTU
146.825	146.225	VK2RET	Taree	O	25	435	3.0	NTU
146.825	146.225	VK2RIB	S. Highlands	O	10	862	3.0	NHB
146.850	146.250	VK2RAB	NW NSW	O	10	1225	4.0	NTM
146.850	146.250	VK2RAW	Illawarra	O	120	780	4.0	NIL
146.850	146.250	VK2RBF	Gtiffith	O	15	450	2.5	NGR
146.875	146.275	VK2RMB	Sydney	O	50	150	3.0	NNW
146.900	146.300	VK1RAK	Canberra	O	60	870	4.0	AWI
146.900	146.300	VK2RAN	Newcastle	O	70	300	5.0	NHB
146.900	146.300	VK2RRT	Condonbello	O	10	441	5.0	NAL
146.925	146.325	VK2RGR	Sydney North	O	30	2.5		NGA
146.950	146.350	VK1RGI	SE NSW	O	50	1770	3.0	AWI
146.950	146.350	VK2RNE	Glen Innes	O	10	1503	4.0	NNW
146.975	146.375	VK2RAN	Newcastle	O	25	300	10	NHB(MM)
147.000	146.400	VK2RCH	Port Macquarie	A				NCK
147.000	146.400	VK2RBN	Sydney	O	120	240	3.5	NWI
147.025	147.625	VK2ROT	Sydney	O	20	90	3.0	NTE

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
147.050	147.650	VK2RBM	Blue Mtns	O	20	800	3.5	NBM
147.075	147.675	VK2RCZ	West Sydney	A	20	150	3.0	NCA
147.075	147.675	VK2RPW	Walcha	A	25	1450	2.0	NWR
147.100	147.700	VK2RWM	Grenfell	O	70	575	3.0	NCW
147.100	147.700	VK2RWN	Norwa	P				
147.100	147.700	VK2RZL	Upper Hunter	L	10	800	3.0	NWE
147.125	147.725	VK2RWS	WICEN Portable	O				NWW
147.150	147.750	VK2RWS	Sydney	O	10	140	30s	NWW
147.175	147.775	VK2RWS	WICEN Portable	O				
147.200	147.800	VK2RSD	Norwa	O	10	600	4.0	NSH
147.200	147.800	VK2RWH	Hunter-Scione	O				NWW
147.225	147.825	VK2RST	Sydney	O	10	25	4.0	NSA(SV)
147.225	147.825	VK2RVL	Rylstone	A				NSG
147.250	147.850	VK2RNS	Sydney	O	50	225	3.5	NHO
147.275	147.875	VK2RPT	Forster	P	10	85	3.0	NGL
147.275	147.875	VK2RL	Wollongong	O	1005	410	4.0	NIL(RV)
147.275	147.875	VK2RMO	Tamworth	A				NTM
147.300	147.900	VK2RST	Blue Mtns	O	25	370	5.0	NSA
147.350	147.950	VK2RBO	Cooranbong	A				
147.375	147.975	VK2RGL	Bulahdelah	O	25	850	3.0	NGL
147.375	147.975	VK2R77	Batemans Bay	P				
147.925	147.325	VK2RGN	Goulburn	O	20	750	3.0	NGN

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
146.550	146.050	VK3RAG	E Gippsland	O	40	580	2.5	VWE(2)
146.550	146.050	VK3RAG	Shepparton	O	80	800	3.5	VWI
146.700	146.100	VK3RML	Melbourne	O	100	500	2.5	VWI
146.700	146.100	VK3RNC	Comyang	O	40	2.5		VWI
146.700	146.100	VK3RON	Ouyen	O	40	2.5		VWI
146.750	146.150	VK3RBA	Ballarat	O	15	750	3.0	VWI
146.775	146.175	VK3RAV	Alexandra	O	50	850	2.5	VSG(5)
146.800	146.200	VK3RLV	Laloraine Valley	O	60	730	2.5	VWE(4)
146.850	146.250	VK3RML	Mildura	O	50	50	2.5	VWI
146.850	146.250	VK3RMB	Melbourne	P				
146.850	146.250	VK3RHO	East Victoria	O	30	1862		
146.850	146.250	VK3RBS	Benalla	O	80	2.5		VWI
146.900	146.300	VK3RBS	Ballarat Nth	O	30	2.5		VWI
146.900	146.300	VK3REB	Balmadene	O	30	2.5		VWI(2)
146.900	146.300	VK3RSH	Swan Hill	O	60	80	2.5	VSI
146.950	146.350	VK3RZB	Grampians	O	50	1170	2.5	VNZ
146.975	146.375	VK3RER	Portland	O	-20			ad
147.000	146.400	VK3RGL	Geelong	O	160	400	2.5	VWI
147.000	146.400	VK3RNE	Wodonga	O	100	1158	2.5	VWY(14)
147.025	147.625	VK3RGS	Toora	O	60	2.5		VWI(4)
147.025	147.625	VK3RAM	Charlton	P				
147.050	147.650	VK3RGC	E suburbs	P				
147.050	147.650	VK3RGO	Omoo	O	40	1221	2.5	VW(2)
147.050	147.650	VK3RVL	Robinvale	O	20	2.5		VWI
147.050	147.650	VK3RWL	Warrambool	O	40	.5		VWI
147.075	147.675	VK3RCR	Melbourne	O				
147.100	147.700	VK3RBP	Bright	O	5	2.5		VWI(14)
147.100	147.700	VK3RGS	S. Gippsland	O	40	3.0		VWI
147.100	147.700	VK3RWA	Ararat	P	30	876	2.5	VWI
147.125	147.725	VK3RGC	Geelong	O	40	2.5		VWI
147.150	147.750	VK3RCV	Benidigo	O	730	3.0		VWM
147.150	147.750	VK3REM	Malacoota	P	40	388		VWI
147.175	147.775	VK3REC	Melbourne	O	40	600	2.5	VEC
147.225	147.825	VK3RWG	W. Gippsland	O	20	1583	2.5	VWE
147.250	147.850	VK3RMB	Melbourne	O	100	1011	2.5	VWI
147.275	147.875	VK3RBU	Osway Ranges	O				
147.300	147.900	VK3RWP	Portland	O	20			VWW

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
146.825	146.025	VK4RGT	Gladstone	O	10	212	2.0	QGL
146.825	146.025	VK4RGY	Gympie	O	20	498	4.0	QGY
146.850	146.050	VK4ROM	Roma	O	30	550	5.0	QRM
146.875	146.075	VK4RET	Dalby	O	60	1145	5.0	QDA
146.875	146.075	VK4RTA	Albionville	O	75	1170		QTB
146.900	146.100	VK4RAR	Rockhampton	O	50	608	4.0	QTA
146.900	146.100	VK4RAT	Townsville	O	100	584	4.5	QTO
146.900	146.100	VK4RGC	Gold Coast	O	50	1040		QGC
146.900	146.100	VK4RMI	Mt Isa	O	20	500	3.5	QMI
146.925	146.125	VK4RSD	Bowen	O	50	20		QSD
146.950	146.150	VK4RDB	Toowoomba	O	30	715	4.5	QWB
146.975	146.175	VK4RDI	Mackay/RTN	O	60	820		QMK
146.900	146.200	VK4RBU	Bundaberg	O	20	620	4.0	QBU(13)
146.900	146.200	VK4RTI	Thursday Is	O	25	104	3.0	QTI
146.900	146.200	VK4RWP	Cape York	O				QWP
146.825	146.225	VK4RST	Stanthorpe	T				QCU

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
146.850	146.250	VK4RHT	Marneba	P	10	990	5.0	QTB
146.850	146.250	VK4RHS	Sunshine Coast	O	40	450	5.0	QSC
146.875	146.275	VK4RHS	Redlands	O	25	70	3.5	Q8
146.875	146.275	VK4RHS	Chinchilla	O	150	340	4.0	Q8
146.900	146.300	VK4RAI	Ipswich	O	70	120	4.5	QIP
146.900	146.300	VK4RGA	Central Old	O	100	1010	4.0	QCL
146.925	146.325	VK4RHR	Cent Old	O				QCH(9)
146.925	146.325	VK4RHR	Redcliffe	O	25	520		QCH
146.950	146.350	VK4RBD	Blackwater	O	25			QRC
146.950	146.350	VK4RCA	Lawrie	O	100	1650	4.0	QCA
146.950	146.350	VK4RGG	Gold Coast	O	50	25	5.0	QGC
146.975	146.375	VK4RRR	Sarina	O	50	600	3.0	QCH(9)
147.000	146.400	VK4RBN	Marina	O	60	630	2.0	Q8V
147.000	146.400	VK4RMM	Bricklay	O	25	320	5.0	P
147.125	147.725	VK4RPT	Wicpen Portable	O				QWV
147.150	147.750	VK4RAG	Brisbane	O	80	90	3.5	QWV
147.150	147.750	VK4RWI	Wicpen Portable	O	50			QWV
147.175	147.775	VK4RWM	Ipswich Wicpen	O	10	1.0		QIP
147.175	147.775	VK4RWT	Wicpen Portable	O	50	630	3.5	QTV
147.625	147.025	VK4RMV	Miriam Vale	O	25	5.0		QMO(13)
147.650	147.050	VK4RBT	Brisbane	O	50	233	4.5	QAR(RV)
147.675	147.075	VK4RBT	Brisbane	O	50	233	4.5	QAR(RV)
147.825	147.225	VK4REG	Brisbane	O	50	50	4.5	QPR(22)
147.850	147.250	VK4RIF	Collinsville	O				QTO
147.950	147.350	VK4RII	Burdin	L	30	218		QBL
147.975	147.375	VK4RWB	Biloela	O	25			QBL(27)
South Australia								
146.825	146.025	VK5RLZ	Elizabeth	P	30	73	4.0	SEL
146.850	146.050	VK5RNC	Naracoorte	O	25	80	2.5	SWI
146.700	146.100	VK5RNM	Port Pirie	O	55	730	5.0	SWI(3)
146.750	146.150	VK5RNP	Lower Eyre Pan	O	60	500	4.0	SWI(3)
146.800	146.200	VK5RNP	Mid Eyre Pan	O	100	400	3.5	SWI
146.825	146.225	VK5RNP	Gairdina Valley	O	50	410	3.5	SWI
146.850	146.250	VK5RHO	Adelaide	O	50	100	5.0	SWI
146.900	146.300	VK5RMG	Mc Gambier	O	25	100	5.0	SWI
147.000	146.400	VK5RIAD	Adelaide	O	50	610	3.5	SWI
147.925	147.325	VK5RLD	Riverland	O	25	86	5.0	SWI
147.825	147.825	VK5RNG		O				SBA(24)
Western Australia								
146.825	146.025	VK6R7F	Stirling	P				WRG
146.825	146.025	VK6RAT	Rottnest Is.	L				WRG
146.850	146.050	VK6RBY	Bunbury	O	25	20	5.0	WSW
146.875	146.075	VK6RNR	Northampton	O	25	280	4.0	WGE
146.875	146.075	VK6RCA	Whin Creek	O	20	225		WWV
146.900	146.100	VK6RAP	Perth	O	40	360	4.0	WRG
146.900	146.100	VK6RWR	Wickham	T	20			WNV
146.925	146.125	VK6RWA	Albany	O				WSW
146.950	146.150	VK6RML	Perth	O	20	300	4.0	WRG
146.975	146.175	VK6RES	Esperance	P				WES
146.900	146.200	VK6RTH	Perth	O	60	230	4.0	WRG
146.900	146.200	VK6RTH	Emu Valley	O	20			WNV(11)
146.925	146.225	VK6RPA	Albany	O	40	430	3.0	WGS
146.850	146.250	VK6RES	North West	O	20	3853.0		WNV(22)
146.850	146.250	VK6RKB	Kambalda	O	30			WGO
146.875	146.275	VK6RSR	Perth-Fremantle	P				WSR
146.900	146.300	VK6RNV	Bunbury	O	20	520	4.0	WRG
146.950	146.350	VK6RPO	Fremantle	O	10	65	3.0	WRG
146.950	146.350	VK6RSC	Goldsworthy	O	20			WWV
146.975	146.375	VK6REE	Portable (sec)	O	20	4.0		WRG
147.000	146.400	VK6REE	Portable (pri)	O	20	4.0		WRG
147.000	146.400	VK6RAW	Katanning	O	25	400	4.0	WKA
147.000	146.400	VK6RAK	Kalgoorlie	O	40	400	5.0	WGO
147.000	146.400	VK6RGN	Geraldton	O	18	400	5.0	WGE
147.000	146.400	VK6RNV	Pin Headland	O	20			WWV(11)
147.100	147.700	VK6RWC	Perth	O				WWV(29)
147.125	147.725	VK6RHS	Gilchrist	P	40			WSW
147.150	147.750	VK6RMA	Manjimup	P				WWV
147.175	147.775	VK6RCA	Portable emerg	O				WRG
147.200	147.800	VK6RPT	Catalpa	O	10	200	4.0	WRG
147.225	147.825	VK6RHW	Toodyay	O	30	450	3.0	WRG(12)
147.250	147.850	VK6RMS	Wyndong	O	20	630	4.0	WRG
147.275	147.875	VK6RWM	Bickelbachem	O	20	400	4.0	WRG(12)
147.300	147.900	VK6RLE	Ennabess	P				WRG
147.325	147.925	VK6RKL	Kellerberrin	P	25	400	4.0	WRG(12)
147.350	147.950	VK6RBN	Busselton	O	10	130	4.0	WKA
Tasmania								
146.825	146.025	VK7RMD	NW Tasmania	O	30	600	5.0	TWU
146.700	146.100	VK7RTH	Hobart	O	80	1310	2.5	TWU
146.750	146.150	VK7RNV	NW Tasmania	O	30	160	5.0	TWU
146.900	146.300	VK7REC	East Coast	O	10	970		TEC(DV)
147.000	146.400	VK7RAA	Launceston	T	60	1400		TWU
147.075	147.675	VK7RWC	West Coast	O	20	1200	3.0	TWU
147.250	147.850	VK7RAF	Hobart	O	25	900	3.0	TMC
Northern Territory								
146.650	146.050	VK8RMS	Gove	O	25	150		SGR
146.700	146.100	VK8RCA	Darwin	O	15	200	8.5	SDA
146.950	146.350	VK8RPA	Alice Springs	O	25	300	3.0	SWI
147.000	146.400	VK8RTE	Darwin	O	15	350	8.5	SDA

## Voice Repeaters - 70 cm Band

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
ACT and New South Wales								
438.025	433.025	VK2RCH	Colls Harbour	P				NCH
438.025	433.025	VK2RTK	S Highlands	O	40	827	2.0	NSO(21)
438.075	433.075	VK2RAG	Gosford-Wyong	O	120	323	3.0	NCC
438.125	433.125	VK2RML	Milton	O	18	330	3.0	NMS
438.175	433.175	VK2RMB	Sydney	O	5	150	3.0	NMW
438.175	433.175	VK2RNT	Armidale	O	3			NAD
438.225	433.225	VK2RWP	Walcha	A	25	1450	2.0	NWR
438.225	433.225	VK2RLW	Illawarra	O	230	801	4.0	NIL
438.275	433.275	VK2RWS	Sydney WICEN	O	2	140	30s	NWW
438.325	433.325	VK2REE	Taree	O	4	930	3.0	NTR
438.325	433.325	VK2RWM	Griffith	P	25	575	3.0	NCW
438.375	433.375	VK2RIR	Canberra	O	60	790	3.5	AWI
438.375	433.375	VK2RIJ	Sydney West	O	15	500	3.0	NBM
438.425	433.425	VK2RCN	Port Macquarie	A				NOCX
438.425	433.425	VK2RIU	Sydney	O	25	100	4.0	NSG
438.475	433.475	VK2RRS	Sydney North	O	10	50	4.0	NGA
438.525	433.525	VK2RGI	SE NSW	O	60	1770	3.5	AWI
438.525	433.525	VK2RPM	Port Macquarie	L	10	552	3.0	NCH
438.525	433.525	VK2RWI	Albury	O	48	240	3.5	NWI
438.575	433.575	VK2RAY	Albury	A				NTC
438.625	433.625	VK2RGN	Goulburn	O	10	750	3.5	NGN
438.625	433.625	VK2RLM	Newcastle	O	5	50	3.0	NAG
438.675	433.675	VK2RAN	Newcastle	O	80	300	5.0	NBH
438.675	433.675	VK2RSC	Lismore	O	10	300	3.0	NSU
438.675	433.675	VK2RTW	Wagga	?	10	300		NWU
438.725	433.725	VK2RSL	Illawarra	O	25	400	4.0	NIL
438.775	433.775	VK2RSL	Norwa	P		600		NSH
438.775	433.775	VK2RSL	Tamworth	P				NTH
438.825	433.825	VK2RSC	West Sydney	A	20	150	3.0	NCA
438.875	433.875	VK2RJB	Jervis Bay	P				NJB
438.950	434.950	VK2RAG	Gosford	A	318			NCC
Victoria								
438.025	433.025	VK3RCC	Melbourne	O	10	30		VWI
438.075	433.075	VK3RML	Melbourne	O	200	1028	2.5	VWI
438.175	433.175	VK3RGL	Eldon	O	80	650	2.5	VSG(1)
438.225	433.225	VK3ROU	Melbourne	O	100	600	2.6	VWI
438.275	433.275	VK3RWE	Gippsland	O	60	400		VWE
438.325	433.325	VK3RCU	Benidgo	O				VWE
438.375	433.375	VK3RBU	Ballarart	T	40	2.5		VWI
438.425	433.425	VK3RAD	Melbourne	O	80	100	2.5	VSG(1)
438.475	433.475	VK3RNU	Wangaratta	O	60	1051	2.5	VWI
438.525	433.525	VK3RPU	Mildura	O	20	2.5		VWI
438.625	433.625	VK3RWI	Portland	O	5			VWV
438.675	433.675	VK3RWU	Grampians	O	100	1170	3.0	VWI
438.700	433.700	VK3REO	Melbourne	O		348	4.5	VNL(30)
438.750	433.750	VK3RHF	Melbourne	O		650	2.5	VTF(15)
438.775	433.775	VK3RBM	Melbourne	O	100	1011	3.0	VWI
438.825	433.825	VK3RRM	Melbourne NW	O	50	673	4.5	VNI
438.875	433.875	VK3RSE	Melbourne	O				VSU
438.925	433.925	VK3RNE	NE Victoria	O	800			VWI
438.975	433.975	VK3RGL	Geelong	O	60	400	2.5	VWI
438.975	433.975	VK3RPU	Manfield	T		1600		VWI
438.975	433.975	VK3RPU	Melbourne	O	40	4.0	2.5	VWI
438.975	433.975	VK3RSU	Shepparton	L				VWI
Queensland								
438.025	433.025	VK4RTQ	Brisbane	O	50	500		QTV
438.075	433.075	VK4RSC	Sunshine Coast	O	20	450		QSC
438.225	433.225	VK4RAT	Toowoomba	O	10	584	4.5	QTO
438.225	433.225	VK4RDG	Cent Old Coast	O	25	608		QCD
438.225	433.225	VK4RGC	Gold Coast	O	50	500	3.5	QGC
438.325	433.325	VK4RCC	Redcliffe	O	25	630	4.5	QRC
438.375	433.375	VK4RWM	Ipswich	O	5	40		QIP
438.425	433.425	VK4RML	Mackay	O	150	40		QMK
438.475	433.475	VK4RDX	Brisbane	O				QX(28)
438.500	433.500	VK4RHR	Clermont	O	50	520		QCH
438.500	433.500	VK4RDX	Brisbane	O	233			QX(28)
438.525	433.525	VK4RBC	Brisbane	O	20	560	2.0	Q8V
438.625	433.625	VK4RAG	Brisbane	O	20	90		Q8V
438.625	433.625	VK4RWI	Portland	L	50			Q8W
438.675	433.675	VK4RBU	Bundaberg	O	10	620	5.0	Q8U
438.700	433.700	VK4RET	Dalby	O	12	1145	5.0	QOA
438.825	433.825	VK4RGY	Gympie	O	20	495		QGY
438.875	433.875	VK4RMC	Gympie	O				QCO
438.950	434.950	VK4RBA	Toowoomba	O	10	180		QCB
438.975	434.975	VK4RDB	Toowoomba	O		710		QDO
439.350	434.350	VK4RIK	Cairns	O	5	480		QTR
439.900	434.900	VK4REX	Maleny	O	50	525	5.0	QGX(8)
439.950	434.950	VK4RIY	Toowoomba	L				QCH
South Australia								
438.325	433.325	VK3ROH	Mt Gambier	O	15	135	3.5	SWI
438.425	433.425	VK3RBP	Barossa Valley	O	100	400	3.5	SBA
438.475	433.475	VK3RBP	Adelaide	O	70	30		SWL
438.525	433.525	VK3RBP	Adelaide	O	30	590	3.0	SWL

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
<b>Western Australia</b>								
438.225	433.225	VK6RTH	Perth	O	40	230		WRG(10)
438.525	433.525	VK6RUF	Perth	O	5	360		WRG(12)
436.675	433.675	VK6RBN	Busselton	P	40	130		WRG
<b>Tasmania</b>								
430.500	433.500	VK7RIN	Central Tas	O	25	1200		TAR
438.530	433.530	VK7RAB	NE Tasmania	O	8	1190		TWN
438.900	433.900	VK7RTC	Hobart	O	8		2.5	TAR
438.650	433.650	VK7RAC	NW Tasmania	O	3	150	2.5	TWU
<b>Northern Territory</b>								
436.275	433.275	VK6RDU	Darwin	O	8	200	3.0	SDA

## Voice Repeaters - 23 cm Band

1281.100	1293.100	VK2RLB	Jervis Bay	P				NJB
1281.750	1293.750	VK2RWB	Sydney	O	10	240	3.0	NWI
1281.777	1293.777	VK3RMB	Melbourne	O	1028			VWI
1281.650	1293.650	VK4REX	Melbourne	O	10	525	5.0	QXQ(8)
1281.250	1293.250	VK5RWH	Adelaide	O	50	200	3.0	SST

## ATV Repeaters

<b>ACT and New South Wales</b>								
446.250	444.250	VK2RTW	Wagga	O	10	300	30	NWG
444.250	1250.000	VK2RWI	Sydney	P				NWI
579.250	426.250	VK2RTN	Newcastle	O				NLH
579.250	426.250	VK2RTS	Springwood	O	300	370	3.0	NSA
579.250	444.250	VK2RTG	Gosford	O	90	220		NCC
579.250	444.250	VK2RTV	Sydney	O	100	60		NCC
1250.000		VK2RAG	Gosford	O		313		NCC
<b>Victoria</b>								
579.250	426.250	VK3REX	Swan Hill	?				
579.250	426.250	VK3RMZ	Bendigo	O		730		VWM
579.250	444.250	VK3RNE	Wodonga	O		1158		VWY
579.250	444.250	VK3RTV	Melbourne	O		600		VWI
<b>Queensland</b>								
444.250	1250.000	VK4RAT	Townsville	P	20	584		QCG(23)
579.250	444.250	VK4RTV	Brisbane	O	100	140		QTV
1250.000	579.250	VK4RPP	SW Bris/piswich	P	10	188		QTV(25)
<b>South Australia</b>								
444.250	426.250	VK5RCN	Cent. North	O	10	400	30	SCN(6)
579.250	426.250	VK5RTV	Adelaide	O	200	200	30	STV(7)
1246.250	444.250	VK5RWH	Southern Vales	P	40	200	30	SSC
<b>Western Australia</b>								
579.250	444.250	VK6RAP	Perth	T	30	360		WRP
<b>Tasmania</b>								
426.250	444.250	VK7RMD	NW Tasmania	O	5	600	30	TNA
579.250	444.250	VK7RAE	Devonport	O	5	220	30	TNA

## Packet Radio Repeaters

NOTE: In New South Wales and Victoria, a number of packet systems are to move from 147 MHz to the new 144.700 - 144.925 MHz packet segment. For these repeaters, the first two columns of the list below show the current and proposed new frequencies. For other states, these columns may list two frequencies, for those systems with dual frequency access.

Current	New	Call	Service Area	S	ERP	HASL	T/O	Sp
<b>ACT and New South Wales</b>								
144.700		VK2RAY	Albury	P				NTC
144.725		VK2RGI	Glen Innes	A				
144.750		VK2RPG	Goulburn	O		750		NGN
144.775		VK2RTM	Tamworth	O		1430		NTM
144.775		VK2RWG	Wagga	O				
144.800		VK1RGI	SE NSW	O	60	1770		AWI(17)
144.800		VK2RMB	Sydney	O	25	150	10s	NMW
144.825		VK2R??	Bathurst	P				
144.825		VK2RCC	Coonabarabran	O		1100		NOR
144.825		VK2RFS	Bega	P		870		
144.850		VK2RPS	Monteagle	A				NGN
144.850		VK2RWI	Sydney	O	10	240	30s	NWI
144.875		VK2RCN	Mid North Coast	A				NOR
144.900		VK2RPH	Sydney	O	10	200		NHO
144.925		VK2RET	Taree	P				NTR
144.925		VK2RPS	Mitigating	O	50	827		NSO
145.050		VK2R??	Lismore	O	25	85	3.0	NTS
147.275	144.700	VK2RAB	Tamworth-Narr.	O	25	1225		NSU
147.575	144.875	VK2RAO	Orange	O	20	1417	30s	NOA
147.575	144.775	VK2RAW	Illawarra	O	100	780	4.0	NIL(16)
147.575	144.900	VK2RCH	Coffs Harbour	O		300		NCH
147.575	144.725	VK2RDX	Blue Mtns West	O	20	1362	3.5	NSG
147.575	144.925	VK2RET	Taree	P				NTR
147.575	144.825	VK2RGF	Griffith	O		450		NGR
147.575	144.850	VK2RLO	Guyra	O				NSU
147.575	144.900	VK2RMU	Milton	O				NMS
147.575	144.875	VK2RPL	Lismore	O	25	85	3.0	NSU
147.575	144.875	VK2RPM	Port Macquarie	O		552		NOX
147.575	144.825	VK2RSH	Newcastle	O	10	400		NWE(16)
147.575	144.775	VK2RPW	Walccha	O		1450		NWI

Current	New	Call	Service Area	S	ERP	HASL	T/O	Sp
147.575	144.875	VK2RSD	Norwa	O		600		NSH
147.575	144.750	VK2RTM	Tamworth	O		1430		NTM
147.500	144.700	VK2RAG	Gosford-Wyong	O	50	313	3.0	NCC(16)
436.875		VK2RPL	Lismore	?	25	85	3.0	NSU
438.075		VK2RGA	Gosford	O		313		NCC
<b>Victoria</b>								
144.700		VK3RPW	WICEN Portable	O	45			VWW
144.725		VK3RPW	WICEN Portable	O	45			VWW
144.750		VK3RPW	WICEN Portable	O	45			VWW
144.775		VK3RPW	WICEN Portable	O	45			VWW
144.800		VK3RPW	Melbourne	L	25		240	VWI
144.800		VK3RPW	WICEN Portable	O	45			VWW
144.825		VK3RPW	WICEN Portable	O	45			VWW
144.850		VK3RPW	WICEN Portable	O	45			VWW
144.875		VK3RPW	WICEN Portable	O	45			VWW
144.900		VK3RPP	Melbourne	O	25		100	VWI
144.900		VK3RPW	WICEN Portable	O	45			VWW
144.925		VK3RPW	WICEN Portable	O	45			VWW
147.575		VK3RPW	WICEN Portable	O	45			VWW
147.575	144.925	VK3RCU	Bendigo	O	25		527	VWI
147.575	144.825	VK3RGV	E Glippsland	T				VWE
147.575	144.875	VK3RGV	Shepparton	O	25		800	VWI
147.575	144.725	VK3RBU	Melbourne	O	25		1028	VWI
147.575	144.725	VK3RBU	Wodonga	O	25		1051	VWI
147.575	No VHF	VK3RPA	Melbourne	O	10		83	VWI
147.575	144.750	VK3RPC	Ballarat	O	20		741	VWI
147.575	144.850	VK3RPG	Grampians	L			1170	VWI
147.575		VK3RPM	Bendigo	L	25		240	VWI
147.575	144.925	VK3RPP	NE Vic	O	25		1840	VWI
147.575	144.900	VK3RPO	NW Vic	L	25			VSR
147.575		VK3RPS	Melbourne	O	25		320	VWI
147.575	144.725	VK3RPU	Mildura	L	25			VWI
147.600	No VHF	VK3RRA	Melbourne	O	45		83	VWI
147.600	144.750	VK3RPP	Ballarat	O	25		741	VWI
147.600		VK3RPS	Melbourne	O	25		320	VWI
<b>Queensland</b>								
147.600		VK3RPW	WICEN Portable	O	45			VWW
147.600		VK3RUG	Eldon/Alexandra	O				
434.200		VK3RPP	Melbourne	L	25		240	VWI
439.050	—	VK3RPA	Melbourne	L			83	VWI
439.050	434.050	VK3RPS	Melbourne	L	25		320	VWI
439.075		VK3RPP	Melbourne	L	25		100	VWI
<b>Frequency List</b>								
Freq 1	Freq 2	Call	Service Area	S	ERP	HASL	T/O	Sp
<b>Queensland</b>								
144.700		VK4RWI	WICEN Portable	O				CWW
144.750	144.900	VK4RHR	Clermont	O				QCH
144.800		VK4RAR	Rockhampton	O		600		CWC
144.825	147.600	VK4RZA	Gold Coast	O	50		940	QDG
144.825	147.600	VK4RZD	Toowoomba	O	50		700	QDG(49)
144.825	147.600	VK4RZE	Darling Downs	O	25			QDG
144.850	147.600	VK4RZB	Brisbane	O	50		230	QDG
144.900		VK4RAT	Townsville	O		584		OTO
144.900		VK4RBD	Blackwater	O				QCH
144.900		VK4RBU	Bundaberg	O	20		620	QBU
144.900		VK4RCA	Calms	O		1650		OCA
144.900		VK4RGA	Gladstone	O	25		1010	QGL
144.900		VK4RMM	Mackay	O	25		320	QMK
144.900		VK4RTA	Atherton T'land	O				QTB
144.900		VK4RZM	Morambah	O	25		800	QCH
144.900		VK4RIK	Calms	P	120		480	QTR
144.900	147.600	VK4RZC	Sunshine Coast	O	50		470	QDG(49)
144.950		VK4RWH	Ispswich	O				QIP
144.950		VK4RWH	Ispswich	O				QIP
144.975		VK4RZS	Sunshine Coast	O				QSC
145.000		VK4RBT	Brisbane	O	50		233	QAR
145.100		VK4RPF	Nth Brisbane	O				QFX(50)
<b>South Australia</b>								
144.900		VK5RSV	Adelaide	O		200		SWI
147.575		VK5LZ	Adelaide	O				SEL
147.575		VK5RBP	Barossa Valley	O				SBA
147.575		VK5RNN	Port Pirie	O		730		SWQ(31)
147.575		VK5RPM	Millicent	O	100		225	SEB
147.575		VK5ZLV	Adelaide	O		610		(26)
147.600		VK5RPG	Adelaide	O				
<b>Western Australia</b>								
144.750		VK6RTR	Perth	O	25		410	WVA
144.800		VK6RTH	Perth	T	25		230	WFD(19)

Freq 1	Freq 2	Call	Service Area	S	ERP	HASL	T/O	Sp
144.850		VK6RAA	Albany	O	10	430		WSG
144.850		VK6RAP	Perth	O		360		WRD(19)
144.850		VK6RAW	Katanning	O	25	400		WKA
144.850		VK6RBN	Busselton	O	25	130		WRD
144.850		VK6RCA	North West	O	20	220		WWV
144.850		VK6RFH	Perth	O	25			WDC
144.850		VK6RMS	Boddington	O	25	630		WRD(19)
144.875		VK6BBS	Perth	O		360		WTT
144.875		VK6RAP	Perth	O	25	360		WRD
147.050		VK6TTY	Perth	O		360		WRD(20)
<b>Tasmania</b>								
147.575		VK7RIT	Hobart	O	10	1310		TWI
147.575		VK7RTY	N Tasmania	O		1400		TWI
<b>Northern Territory</b>								
147.500 BBS		VK6BBS	Alice Springs	O		300		SAL

## RTTY Repeaters

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
<b>New South Wales</b>								
146.875	146.075	VK3RTY	Sydney	O	40	72	10	NAN
146.875	146.375	VK3RAN	Newcastle	O	10	300	5.0	NLH(RV)
147.275	147.875	VK2RLR	Wollongong	O	10	398	4.0	NIL(RV)
439.325	434.325	VK2RTY	Sydney	P	40	72	10	NAN
<b>Victoria</b>								
147.325	147.925	VK3RBB	Gippsland	?	20	730	10	VWI
147.350	147.950	VK3RTY	Melbourne	O		600		VWI
<b>Queensland</b>								
147.650	147.050	VK4RBT	Brisbane	O	50	233	4.5	QAR(RV)
147.675	147.075	VK4RBT	Brisbane	O	50	233	4.5	QAR(RV)
<b>South Australia</b>								
146.875	146.075	VK3RSV	Adelaide	O	25	200	10	SSC(18)
<b>Western Australia</b>								
147.050	147.650	VK6RTY	Perth	O	15	360	10	WRD(20)

## Repeater Notes

- VK3RTN 53.675 and VK3RAD 438.525 are linked - 123 Hz access.
- VK3RUG to be added to the link.
- VK3REP 146.550, VK3REB 146.900 and VK3RGO 147.050 are to be linked.
- VK3RNN 146.700 and VK3REP 146.800 are to be linked.
- VK3RGS 147.025 and VK3RLV 146.800 are to be permanently linked.
- VK3RGM 53.975 and VK3RUG 146.775 are linked - 123 Hz access.
- VK3RCN can be linked to VK3RTV on command: control link 147.3. Link video input 579.25, extra audio input 147.3.
- VK3RTV can be linked to VK3RCN on command: control link 147.3. Link video input 444.25, extra audio input 147.4. SSTV input 147.350.
- VK4REX 1281.850 and 439.900 are permanently linked. A signal on either input is retransmitted on both outputs.
- VK4RBD 146.950, VK4RRR 146.925 and VK4RRR 146.975 are linked by VK4REB.
- VK6RTH 53.800 and VK6RTH 438.225 are permanently linked.
- VK6RWP 146.800 and VK6RWN 147.000 are to be linked.
- VK6RWM 147.225 and VK6RWM 147.275 are permanently linked.
- VK6RWM 147.275 is to be linked to VK6RRL 147.325.
- VK4RBU 146.800 and VK4RMV 147.825 have DTMF command link.
- VK3RNE 147.000 and VK3RNP 147.100 are to be linked.
- VK3RHF tone metre repeater link on 438.750 also operates as a repeater in its own right. Tone access 141.3 Hz.
- To remain on 147 MHz until Channel 5A closes.
- 4000 baud.
- VK3RSV has packet gateway to VK5WI BBS.
- VK6RAP 144.850, VK6RTH 144.825 and VK6RMS 144.850 are to be linked.
- VK6RTY and VK6RTY are linked RTTY/packet repeater and bulletin board.
- After 15 seconds of inactivity, a carrier of at least 2 seconds duration is required to regain access.
- Off air for extensive repairs.
- FM 1m, VSB AM out.
- Experimental simplex link which operates with VK3RBP (147.575).
- VK4RRP is an FM ATV translator for VK4RTV.
- Call sign to be changed to VK3RAD.
- CTCSS 88.5 Hz.
- CTCSS 91.5 Hz.
- CTCSS 77 Hz.
- CTCSS 123 Hz. VK3REO 438.700 to be linked to VK3RRM 434.325.
- Directional beam, aimed south.
- MM Multimode repeater.
- DV Datavoice repeater.
- RV RTTY - voice repeaters.
- SSTV - voice repeater.

# Index of Beacon and Repeater Sponsors

ACT	NWG	Wagga ARC	QGC	Gold Coast ARS	WRG	WIA Repeater Group
AWI	NWI	WIA NSW Div	QGL	Gladstone ARC	WRP	WARG/WPT
<b>New South Wales</b>			QGX	Gold Coast R Exp Grp	WSA	WIA Signals ARG
NAD	NWR	Waikato Radio Grp	QGY	Gympie ARC	WSG	Southern Elec Grp
NAG	NWW	WG2 WICEN	QIP	Ipewich RC	WSR	Southern River Grp
NAU	NWA	Balarat AR Group	QMI	Mid Isia DARG	WSW	Southwest ARG
NAL	NVC	Camb. Gr. School	QMK	Mackay ARC	WTT	Think Tank
NAN	VEC	EMDRG	QMO	Monto ARC	WVH	WIA VHF Group
NBM	VGG	Gippsland Gate RC	QRC	Redcliffe RC	WWA	Western ARS
NCA	VNE	North East ARG	QRG	Radio Amateurs' Grp	WWI	WIA WA Div
NCC	VNL	News Links ARG	QRN	Roma DARS	WWK	Wickham ARC
NCH	VSA	Vic Scout Assoc	QRX	Radio Exp. Group	WWW	VK6 WICEN
NCW	VSG	Six Metre Flap Grp	QSC	Sunshine Coast ARC	<b>Tasmania</b>	
NFS	VSH	Swan Hill DARC	QTB	Tableland REC	TAR	Amateur Radio Assoc
NGA	VSR	Sunraysia ARG	QTI	Thursday Is RC	TEC	East Coast ARC
NGL	VSE	SE UHF Repeater Grp	QTO	Townsville ARC	TMC	Aust Maritime Coll.
NGN	VTF	10m FM Group	QTR	Old Tropical VHF Ass.	TMF	Mt Faulkner Flap Grp
NGR	VWE	WIA Eastern Zone	QTV	SEQ ATV Group	TNA	NW ATV Group
NGU	VWI	WIA Vic Div	QWC	WIA Cent Qld Branch	TWC	West Coast RG
NHB	VWM	WIA Midland Zone	QWI	WIA Qld Div	TWT	WIA Tas Div
NHO	VWW	VK3 WICEN	QWP	Wagga RC	TWN	WIA Northern Branch
NIL	VWX	WIA NW Zone	QWW	VK4 WICEN	TWS	WIA Southern Branch
NJB	VWY	WIA NE Zone	<b>South Australia and N.T.</b>		TWU	WIA NW Branch
NLH	VWZ	WIA Western Zone	SAL	Alice Springs ARC	TWW	VK7 WICEN
NLI	<b>Queensland</b>		SBA	Barossa ARC		
NMS	QAR	GARDATA	SCN	Cent North ATV Grp		
NMW	QBA	Brisbane ARC	SDA	Darwin ARC		
NNW	QBL	Brisbane DRC	SEL	Elizabeth ARC		
NDA	QBU	Bundaberg ARC	SER	SE Radio Group		
NOR	QBV	Brisbane VHF Group	SGR	Grove Repeater Grp		
NOT	QBW	Bowen RAG	SSC	South Coast ARC		
NOX	QBY	Bayside ARS	SST	Southern ATV Group		
NSA	QCA	Calina ARC	STV	SA ATV Group		
NSG	QCC	Chinchilla RC	SWI	WIA SA Div		
NSH	QCD	Cent Qld Dig Grp	<b>Western Australia</b>			
NSJ	QCG	Commex Group	WDC	WAADCA		
NSO	QCH	Cent Highlands ARC	WES	Esperance ARS		
NSU	QCO	Coooloolo ARC	WGE	Geraldton ARC		
NTC	OCU	Cunningham RC	WGO	Goldfields ARC		
NTM	QDA	Dalby DARC	WKA	Katanning ARC		
NTN	QDD	Darling Downs RC	WNW	ARS of NW Aust		
NTU	QDG	Digital Group	WPT	Perth TV Group		
NWE	QDW	Waterson Group	WRD	WARG/WAADCA		

# WIA Videotape Program Title Listing

as of 1/1/92

SUPPLIED BY JOHN INGHAM VK5KG  
FEDERAL VIDEOTAPE CO-ORDINATOR

See note	TITLE (In chronological order within each subject grouping)	Lecturer	Prod.	Approx Dur.	Col B&W	Year Prod	Description Other Information
<b>AMATEUR RADIO - HISTORIC INTEREST</b>							
	Wireless Telegraphy - circa 1910			10mins	B&W	1910	Archive material courtesy David Wardlaw VK3ADW
o	Amateur Radio - TV Pilot		WIA NSW	30mins	B&W	1968	Archive material courtesy TEN channel 10
	Opening of Burley Griffin Bldg - SA HQ		VK5KG	50 mins	Col	1977	Archive material
	ATV in Australia 1978 - made for British ATV Club		VK5KG	30mins	Col	1978	Archive material
	ATV in United Kingdom 1978 - reply from BATC		GBCJS	50mins	Col	1978	Archive material
	ATV in Australia 1980/81 - Made for British ATV Club		VK5KG	60mins	Col	1980	Clips from ATV Groups in VKs 2,3,4,5 & 7
	History of ATV in South Australia		VK5KG	30mins	Col	1980	Archive material, still building
	ATV in United Kingdom 1978/81		GBCJS	30mins	Col	1981	Remake of their previous effort
o	CQ ATV DX International 1983	Don Fink	WB2LLB	60mins	Col	1983	ATV in USA and Europe
	High Definition TV Tutorial		WB2LLB	60mins	B&W	1983	A look at what is to come in Broadcast TV
	ATV Hamfest, York Pennsylvania, Sept '83	Various	WB2LLB	6mins	Col	1983	Various ATV technical lectures from USA
	Opening of Amateur Radio House - NSW HQ		VK2BDN	1' 42"	Col	1983	Archive material
	VK2 75th Aniv. Seminar Keynote Speeches		WIA NSW	2' 15"	Col	1983	Dr. David Wardlaw & State Manager DOC
	ATV in Victoria, 1984		VK3AHJ	54mins	Col	1984	Courtesy of "The Roadshow Gang"
o	Heard Island Expedition		ch 2,7, 9,10	20mins	Col	1984	Archive material; NO LOAN OR COPY AVAILABLE
	Heard Island Expedition	VK2BCC	WIA NSW	60mins	Col	1986	Raw Unedited; from 1986 VK2 Seminar
<b>AMATEUR RADIO - PROMOTIONAL</b>							
o	The Ham's Wide World		ARRL	27mins	Col	1969	Superseded by "The World of Amateur Radio"
	This is Amateur Radio		ARRL	15mins	Col	1970	Pitched at teenagers
	Moving Up to Amateur Radio		ARRL	11mins	Col	1975	Pitched at CBers
o	TJ1RL DXpedition		JARL	60mins	Col	1976	General Amateur Radio interest; LOAN ONLY
	This Week has 7 Days looks into Amateur Radio		HSV7	25mins	Col	1978	Pitched at teens; includes some ARRL footage
o	The World of Amateur Radio		ARRL	26mins	Col	1978	Superseded by "The New World of Amateur Radio"
	Amateur Radio - The National Resource of Every Nation		ARRL	6mins	Col	1979	Encapsulates ATF, good for public exhibitions
	The New World of Amateur Radio		ARRL	28mins	Col	1986	Supersedes "The World of Amateur Radio"
<b>ANTENNAS</b>							
	G6CJ's Aerial Circus	G6CJ	WIA	90mins	B&W	1977	THE Definitive Antenna Lecture; LOAN ONLY
	Wire Antennas	VK5RG	VK5KG	40mins	B&W	1978	Antennas for HF and Antenna Tuners
	Loaded Wire Antennas	VK5NN	VK5KG	50mins	Col	1980	Using Inductive and Capacity loaded Antennas
w	Antennas and Directivity	VK2BBF	OTC	73mins	Col	1985	Lecture given to a group of Radio Amateurs
	Antenna Rotator Systems	VK5AM	VK5KG	50mins	Col	1986	Servicing the several different types
	Broadband Antennas	VK5RG	VK5KG	65mins	Col	1986	Includes terminated antennas
<b>ATV - ACTIVITY</b>							
	Hallo from America - Made for British ATV Club		WB0OCD	100min	Col	1968	Clips from ATV Groups in the USA
	ZL ATV Activity		ZL1ABS	62mins	Col	1986	"VCR QSO" from ZL1ABS
	VKS ATV Call-in		VKSZBD	89mins	Col	1990	Made for VK4XRL who had recently visited
<b>ATV - GENERAL INTEREST</b>							
	Low Definition Television	Chris Long	VK5KG	25mins	Col	1982	Re-creation of TV as transmitted by Baird
	Model Aero-Nautical Mobile ATV	VK5GO	VK5KG	8mins	Col	1983	ATV camera & TX mounted in a model aeroplane
	VK5GRN - Aust's first wind powered ATV repeater.	VK5KAU	VK5KG	81mins	Col	1986	Tour of VK5GRN by Barry Bryant (silent key)
	Australian TV History - The Untold Story	Chris Long	VK5KG	56mins	Col	1986	Lecture to Radio Amateurs Old Times Club
	Australian TV History - Part 2	Chris Long	VK5KG	49mins	Col	1986	Technical slides not used in the above
NEW	The Development of the TV Test Card	George Hersee	G8PTH	43mins	Col	1986	Made for BATC by the BBC Training Dept
NEW	TV for Amateurs		BATC	19mins	Col	1990	Excellent introduction to ATV
	The first nation-wide ATV AUSSAT TX		Gleadesville ARC	2hours	Col	1990	Noisy off-satellite but interesting
<b>ATV - TECHNICAL</b>							
o	The Signal to Noise Story	VK3ATY	VK3AHJ	45mins	Col	1982	Superseded by "UHF Pre-amplifiers" (below)
	UHF Pre-amplifiers	VK3ATY	VK3AHJ	45mins	Col	1983	Explanation and demo. of low noise preamps
	Getting Started in Amateur Television	VK5KTV	VK5KG	55mins	Col	1983	How to set up an ATV station
	Testing ATV Transmitters	VK5KG	VK5KG	50mins	Col	1983	How to correctly measure ATV systems
<b>COMPUTERS</b>							
	Demo. of VK5RTV's Micro-Computer Controller #1	VK5KG	VK5KG	10mins	Col	1979	First u-Computer controlled repeater in VK
o	Understanding Micro-Processors	VK5PE	VK5KG	60mins	Col	1980	A somewhat dated technical description
o	An ATV Hamshack Micro-Computer	VK3AHJ	VK3AHJ	10mins	Col	1981	Describes now unavailable microcomputer kit
	Getting Started in Amateur Micro-Computers	VK5IF	VK5KG	33mins	Col	1983	Demo. of hard- & software for Amateur Radio
<b>DATA TRANSMISSION</b>							
	Getting Started in Amateur RTTY	VK5JM	VK5KG	85mins	Col	1983	RTTY using teleprinters and Micro-Computers
	Amateur Packet Radio	VK5AGR	VK5KG	60mins	Col	1984	Theory and Demonstration.
	Packet Radio - 10 months on	VK2XVJ VK2AAB	WIA NSW	65mins	Col	1985	Raw Unedited; from 75 aniv. VK2 Seminar
w	X25 Protocols and Packet Switching	VK2ZXB	OTC	47mins	Col	1986	Lecture given to a group of Radio Amateurs
<b>MICROWAVE TECHNIQUES</b>							
	Introducing Microwaves	VK5ZO	PJ Video	74mins	Col	1988	Des CLR gives a "Nuts & Bolts" technical lecture
<b>PROPAGATION</b>							
	Getting Started in Understanding the Ionosphere	VK5NX	VK5ZBD	50mins	Col	1983	How the ionosphere aids HF communication
	VHF Signal Enhancement by Aircraft	VK2ZAB	WIA NSW	70mins	Col	1986	Raw Unedited; from 1986 VK2 Seminar
<b>SATELLITES</b>							
o	Getting Started in Amateur Satellites	VK5HIV VK5AGR	VK5KG	60mins	Col	1983	Superseded (see below)
o	An Introduction to Amateur Satellites (Pt 1)	VK5AGR	VK5KG	60mins	Col	1984	An overview of Amateur Satellite working
o	Micro-Computer Aids to Satellite Tracking (Pt 2)	VK5AGR	VK5KG	30mins	Col	1984	Programs for tracking & decoding telemetry
	Using Phase III Amateur Satellites	VK5HI	VK5KG	90mins	Col	1984	History, construction & use of high orbit sats.
	The Oscar Oscar Phase 3 Story	DJ4ZC	VK5KG	80mins	Col	1985	Dr. Karl Meinzer "The Father of Oscar" inc film of



<b>Antennas for Satellites</b>			<b>WIA NSW</b>	<b>75mins</b>	<b>Col</b>	<b>1986</b>	<b>Raw Unedited; from Dr Trevor Bird's 1986 VK2 Seminar</b>
Apollo 13 Disaster			VKSJG	80mins			
SSTV Pictures from Space - Voyager		VKXJM	VKSJG	15mins	Col	1980	Australian tracking procedure saved Apollo 13
Ausnet - Australia's Domestic Comms Satellite		VKXJM	VKSJG	82mins	Col	1993	CSTV plc converted from Saturn by post
Amateur Radio's Newest Frontier			ARRL	26mins	Col	1994	Technical description of services offered
Working WSLFL In orbit from VKIORR		Richard Elliot		23mins	Col	1985	Amateur Radio in Space; General P.R.
					Col	1986	Raw Unedited actuality footage
An Auxiliary Battery Charger		VKSIX	VKSJG	30mins	Col	1981	Charging a second mobile battery
Lecture - Winning Foxshots		VKTST	VKSJG	45mins	Col	1981	How to do it from one who has!
Getting Started in Amateur Construction		VKSAIM	VKSJG	50mins	Col	1983	Mechanical hints for novice constructors
The Communications. Consequences of Nuclear War	Dr. John Coulter	VKSZIB		60mins	Col	1983	Why your gear may not survive even if you do!
The Far Eastern Broadcasting Company		VKSJG		60mins	Col	1984	How a Short Wave Broadcaster operates
The Aus. "Over the Horizon Radar"	Dr. Phil Whitham			40mins	Col	1984	How the "Australian Woodpecker" works
What to Expect when the RI Calls!		VKSJG		34mins	Col	1984	by Geoff Carter - a Dept of Comms. Field Officer
Doppler Direction Finding for Foxhunters		VKBZYH	WIA NSW	43mins	Col	1985	Raw Unedited; from 75 anv. VK2 Seminar
Fitting BNC Connectors			OTC	7mins	Col	1985	Correct Assembly of Crimp type BNC plugxg
Handling Static Sensitive P.C.B.s.	Paul Tardent	OTC		6mins	Col	1986	Improving reliability of Printed Cts.
Extra License Grades		VKGZTB	WIA NSW	70mins	Col	1986	Raw Unedited; Raw Unedited 1986 VK2 Seminar
Quartz Film Modules		VKSQI	VKSJG	45mins	Col	1986	Description of modules available from VKS via
Quartz Crystals		VKSGL	VKSJG	106mins	Col	1986	Dem Tibrook gives a "Nuts & Bolts" expert

NOTE: "C" = Copyright; no copy service... "O" = Optically Converted to PAL from NTSC by WB2LLB; noticeable flicker. "W" = available ONLY to Radio Clubs Affiliated with the WIA as per agreement with OTC. "o" = program now out of date. Standard Formats: "Video-8" & "VHS" both Standard and Long Play, & "Beta"; - please specify when ordering.

## New Frequencies for VNG

Continued from page 22

60th minutes without interruption to the time signals. The speech is "notched" to allow seconds markers to continue and has spectral components around 1000Hz removed to avoid erroneous operation of tuned relay time circuits. The text of the normal announcement is: "This is VNG, Llandilo, New South Wales, Australia on 5, 8.638, 12.984 or 16MHz. VNG is an Australian standard frequency and time signal service. Enquiries may be directed to: VNG Users Consortium, GPO Box 1090, Canberra, ACT, Australia 2601."

The announcer is Graham Connolly, an amateur radio operator (callsign VK2BL) and retired ABC radio newsreader.

**Morse Station Identification — Broadcast on 8.638 and 12.984MHz Only:** Given during the 15th, 30th, 45th and 60th minutes without interruption to the time signals. VNG is transmitted in slow Morse at a frequency of approximately 500Hz up to six times per minute. Broken ident may occur at the beginning and end of the minute.

**VNG Funding:** AUSLIG (the Australian Surveying and Land Information Group of the Department of Administra-

tive Services) has undertaken to fund VNG for at least five years from June 1989, provided it gets adequate cost recovery from users. This may be achieved by purchasing bulletins from AUSLIG or by making donations payable to the VNG Users Consortium.

**Reception Reports:** Written reports or cassette tapes should be sent to the VNG Users Consortium. Reports should be sufficiently detailed to permit verification. Tape recordings can be very short provided VNG is recognisable. Tapes will not be returned unless requested. QSL folders will be issued if reports are valid, but return postage would be appreciated from those other than financial contributors to VNG's running costs.

**Time Code:** The time code format incorporates time of day and day number of year information in binary-coded-decimal (BCD) form, and the method of encoding complies with CCIR recommendations for time codes. The BCD time code transmission takes place between seconds marker 20 and seconds marker 46.

## The Story Of Stephen Frith

Continued from Page 20

1000, the cursor scans to the next option and again enters the count loop and so on. When the switch is pressed, the program jumps out of the count loop and stops, and does not proceed until the switch is released. In this way, if Stephen has a spasm while he is pressing the switch or for some reason cannot release the switch, the program "waits" for him.

### General Hints

Programs should be ready to **run** as soon as power is applied. The only attention needed from the nursing staff is to switch **on** the mains power. From then on the programs should be under the complete control of the operator.

I have found the Microbee 32KROM-based computer to be more than adequate for this work. This model is easy to program, and what is very important, very cheap to buy on the second-hand market. All my latest programs are put into EPROMs and there are spaces for at least five on the Microbee memory board. I have fitted a new Basic ROM to the memory board, which passes computer control to the first EPROM when first switched on. The keyboard now has no role to play and could be removed, making the computer dedicated and virtually a black-box.

In the next and final instalment, Part 4, I will give some details of the effects that adding a speech synthesiser has made to Stephen's computer system. ar

# AWARDS

JOHN KELLEHER VK3DP - FEDERAL AWARDS MANAGER

Activity in the awards area has been most encouraging, and I am pleased to report that with your participation, help and sometimes timely advice, I have made a success of this otherwise "binding" job, and turned a "chore" into a meaningful pleasure. The backlog of applications has been removed, and correspondence is now on a weekly basis.

This office handles all awards from IARU-affiliated countries, but not from CQ magazine. The latter are dealt with by Bill Vogel, whose address was published earlier.

The most popular awards so far processed have been for WAVKCA, WAS (USA) and WAC (USA), along with upgrades for DXCC, but very few for the actual DXCC. A DXCC standings list is shown below.

## DXCC Standings list updated 1/2/92

DXCC Open/

Mixed Tallies

322/373	VK6RU	280/303	VK3KS
322/342	VK6HD	278/313	VK7LZ
322/330	VK3AKK	278/295	VK6HD
321/367	VK6MK	276/303	VK2APK
321/363	VK3YL	275/317	VK6RU
321/355	VK5WO	261/263	VK3AKK
321/330	VK3OT	259/291	VK3RJ
319/363	VK4KS	238/260	VK6TL
317/350	VK4RF	237/248	VK5WO
314/329	VK3AMK	213/220	VK7BC
313/318	VK7BC	211/220	VK3JI
312/314	VK3YJ		
311/324	VK4AK	DXCC SSB/	
310/349	VK4SD	Phone Tallies	
308/345	VK7LZ	322/373	VK6RU
308/330	WA3HUP	322/372	VK5MS
306/316	VK3QI	322/353	VK5WO
306/356	VK4FJ	322/342	VK6LK
304/321	VK5WV	322/335	VK6HD
302/339	VK3XB	322/330	VK3AKK
299/323	VK4PX	321/363	VK4LC
299/310	VK1ZL	321/367	VK6MK
295/299	VK3CQJ	318/327	VK3OT
293/309	VK4BG	317/333	VK4RF
292/294	VK2APK	314/329	VK3AMK
291/309	VK4UC	314/326	VK6NE
290/314	VK2SG	314/315	VK3DYL
287/312	VK2APK	313/350	VK5AB
287/289	VK6RO	312/314	VK3YJ
		310/314	VK3CSR
		309/324	VK4VC
		309/321	VK4AK
		309/313	VK3CSR
		308/319	VK3QI
		306/326	VK7LZ
		305/321	VK5XN
		305/311	VK3RF
		305/310	VK3AWY
		305/308	VK3WJ

DXCC Standings

List. CW

311/357	VK2QL	309/313	VK3CSR
304/340	VK3YL	308/319	VK3QI
302/348	VK2EO	306/326	VK7LZ
300/330	VK3XB	305/321	VK5XN
298/322	VK4RF	305/311	VK3RF
297/345	VK4FJ	305/310	VK3AWY
286/326	VK3YJ	305/308	VK3WJ

Tables shown are reproduced  
from Edmund T Tyson N5JTY  
"Conversion Between Geodetic  
and Grid Locator Systems" QST  
January 1989.

305/308	VK6AJW	278/279	VK5EE
304/321	VK5WV	276/298	VK3KS
304/307	VK6AJW	274/275	VK3VU
304/306	VK3YZ	267/271	VK3CYL
303/309	VK7BC	266/278	VK5LC
303/307	VK6HE	265/281	VK2AAK
300/343	VK4FJ	265/270	VK5RX
299/300	VKVK1ZL	257/258	VK3DP
299/300	VK3DYL	256/298	VK3NC
294/308	VK1WB	254/274	VK2SG
294/328	VK2APK	254/256	VK3GI
292/312	VK4PX	252/277	VK3TL
290/294	VK6YL	248/261	VK3VO
288/333	VK3JA	245/256	VK3VK
287/292	VK6IR	245/260	VK3JI
287/290	VK6IH	225/240	VK3VQ
287/289	VK6RO	224/225	VK2CKW
286/311	VK3JI	220/222	VK5BO
285/291	VK7AE	212/213	VK6YF
285/290	VK2DU	202/205	VK6NAT
284/290	VK3DU	200/201	VK4DD
283/286	VK5OU		

In the previous issue, the rules for the WIA grid square award were published. Now I will attempt to simplify the actual procedure of determining your own grid square. Bear in mind that the WIA GSA only requires verified contacts in a two-degree by one-degree area.

## The Maidenhead Locator System

The earth's surface is divided into 324 "fields", each 20 degrees (longitude) by 10 degrees (latitude). Each field is divided into  $10 \times 10 = 100$  "squares", each two degrees (longitude) by one degree (latitude). It is upon the latter you will operate. Start by finding your latitude and longitude from a local area map.

The first character (always a letter) specifies longitude in 20-degree increments. The second character (also a letter) specifies latitude in 10-degree increments. The third and fourth characters are digits in the range 0 through 9. The third character divides longitude lines into two-degree increments. The fourth character divides latitude zones into one-degree increments.

The following tables should assist you in determining your actual "grid square".

Table 1  
1st Longitude  
Character

Degrees  
Longitude

-180	A
-160	B
-140	C
-120	D
-100	E
-80	F
-60	G
-40	H
-20	I
0	J
+20	K
+40	L
+60	M
+80	N
+100	O
+120	P
+140	Q
+160	R
+180	

Letter

Table 2  
2nd Longitude  
Character

Degrees  
Longitude

-20	0	0
-18	1	+2
-16	2	+4
-14	3	+6
-12	4	+8
-10	5	+10
-8	6	+12
-6	7	+14
-4	8	+16
-2	9	+18
0		+20

Number

Table 4

1st Latitude  
CharacterDegrees  
Latitude

-90	A
-80	B
-70	C
-60	D
-50	E
-40	F
-30	G
-20	H
-10	I
0	J
+10	K
+20	L
+30	M
+40	N
+50	O
+60	P
+70	Q
+80	R
+90	

Letter

Table 5

2nd Latitude  
CharacterDegrees  
Latitude

-10	0	+0
-9	1	+1
-8	2	+2
-7	3	+3
-6	4	+4
-5	5	+5
-4	6	+6
-3	7	+7
-2	8	+8
-1	9	+9
0		+10

Number

Lettering of longitude begins at 180 degrees west (A) and carries on through the prime meridian and so to 180 degrees east (R). For latitude, lettering begins at 90 degrees south (A) and continues to 90 degrees north (R).

If you have any difficulty, this office has a worldwide locator chart. Just write to the awards manager with SASE. I also have a short BASIC program for determining the six-digit maidenhead locator. ar

## CONTESTS

(INFORMATION PROVIDED BY RELEVANT CONTEST MANAGERS)

## 1992 John Moyle Contest Rules

Phil Rayner VK1PJ

Once again those who enjoy a weekend in the bush should be planning for the John Moyle field day. This year, as promised, there are no rule changes. The helpful hints received last year showed that there is nothing basically wrong with the rules. However, I would suggest that operators not only read and familiarise themselves with these rules, but they should also read the comments printed with last year's results.

There promises to be quite a bit of activity on the DX front this year with the John Moyle Field Day taking place on the same weekend as the Japan DX contest. Both six metres and HF should be interesting, with maybe even a bit of DX on two metres. When making repeat contacts with stations in the Japan DX contests, please remember they cannot count repeat contacts, hence they may be a bit reluctant to make another contact.

I hope to be on air the weekend prior to the contest—family commitments permitting—to help anyone with rule interpretation etc. Please, if you do have any complaints, submit them by phone or with your entry. My planned schedule is 14.275MHz at 1200 EST and 3.570MHz 2100 EST (approx) Sunday 8 March 1992. The 80m meeting will commence when the VK1 Award Net finishes, on the same frequency as the VK1 Award Net. This is an experiment to try to improve the contest. If it helps, I will do my utmost to continue the practice. For those who do not have HF call-signs, I am sure you can find a way of joining one of the nets, maybe as a second operator. If anyone would like to contact me privately, my home phone number is (062) 29 3260 and at work (062) 80 5966. My home address is in the callbook. Best of luck. See you all on air. I hope to be one of the operators at the VK1 WIA station. Don't worry, I get someone else to check any entry I am involved with.

## Aim

1. To encourage portable operation on the amateur bands and is intended to help amateurs become familiar with portable operation and thus assist in training them for emergency situations. The rules therefore have been designed to encourage all amateurs to operate in the field.

## Contest Period

1. From 0100 UTC 14 March 1992 to 0759 UTC 15 March 1992. It is intended that this contest shall take place on the third weekend in March each year.

## Sections

3. All entries are to consist of one choice from each of the following: eg six-hour, portable, single op, phone, VHF:  
a. 24 or six-hour operation;

- b. portable, home or receiving station;
- c. single or multiple operator;
- d. phone, CW or open mode;
- e. HF, VHF/UHF or ALL bands

## Scoring

4. For valid contacts:
  - a. Portable HF stations score two (2) points per contact;
  - b. home HF stations score two (2) points for contacts with portable stations and one (1) point for contacts with home stations;
  - c. all contacts on the 50MHz band score as for HF;
  - d. the following scores may be claimed by portable stations operating on 144MHz and higher:
    - (1) 0 to 49km score two (2) points per contact;
    - (2) 50 to 99km score ten (10) points per contact;
    - (3) 100 to 149km score twenty (20) points per contact;
    - (4) 150km and greater score thirty (30) points per contact; and
    - (5) For each of the 144MHz and higher contacts, the details of the respective station locations are to be supplied. Such details must include either latitude and longitude references for each station or some satisfactory proof showing the distance over which the QSO was conducted. These details must be shown on the summary sheet.

## Log Submission

5. Each log must be accompanied by a summary sheet that provides the following information: call-sign, name, address, section entered, number of contacts and claimed score.
6. The summary sheet should also note the equipment used, station location and, for multiple operator stations, a list of all call-signs that operated the station together with their signatures.
7. The summary sheet shall include the following declaration signed by the operator or, in the case of a multiple operator station, one of the licensed amateurs who operated the station: "I hereby declare that this station was operated in accordance with the rules and spirit of the contest."
8. Logs should be forwarded to The John Moyle Contest Manager, PO Box 315, Fyshwick ACT 2609 Australia. Logs are to be postmarked no later than 30 April 1992.
9. At the discretion of the contest manager, certificates will be awarded to the winner

of each portable section. The six-hour certificate cannot be won by a 24-hour station.

10. The President's Cup will be awarded to the Australian station with the highest CW score. The recipient shall be presented with an individually inscribed wall plaque as permanent recognition.

#### Disqualification

11. General WIA contest disqualification criteria as published will apply to this contest. Untidy, illegible and messy logs will automatically be disqualified.

#### Definitions

12. A portable station is one which operates from a power source which is independent of any permanent installation, ie batteries, portable generators, solar and wind power.
13. The size of any portable station shall be restricted to approximately that of an 800m diameter circle.
14. A single operator station is one where all operating of the transmitting apparatus is done by one operator only.
15. A single operator may only use a callsign of which he/she is the official holder. A single operator may not use any callsign belonging to any group, club or organisation for which he/she is a sponsor except as part of a multi-operator entry.
16. A multiple operator station is a station operated by more than one operator.
17. Only one callsign may be used from a multiple operator station.
18. Multiple operator stations may use only one transmitter on a given band at any one time, regardless of the mode in use.
19. Multiple operator stations are to use a separate log for each band.
20. A club, group or organisation, by default, is considered a multiple operator entry.
21. No apparatus may be given to help the single operator prior to and during the contest. The practice of clubs or groups providing massive logistic support for a single operator is totally against the spirit of the contest. Offenders will be disqualified and possibly banned from participation in the contest for a period of up to three years.
23. SSB, FM and AM all count as phone.
24. CW and RTTY are both regarded as CW.
25. It is not expected that any other modes would be used in this contest, but if they are, they shall be regarded as CW.
26. All amateur bands may be used with the exception of the 10, 18 and 24MHz bands.
27. Cross-band contacts are not permitted, except by satellite repeater systems.
28. Cross-mode contacts are not permitted.
29. Contacts made via terrestrial repeater systems are not permitted. However, repeaters may be used to arrange a contact on a simplex frequency.
30. Portable stations are permitted to make repeat contacts and claim the appropriate

points, provided that at least three (3) hours have elapsed since the previous contact with that station on the same band and mode.

31. Home stations may not claim any points for repeat contacts.
32. Stations are to exchange ciphers consisting of the RS/RST and a number commencing at 001 and incrementing by one (1) after each contact.
33. Portable stations shall add the letter "P" to their own cipher, eg 59001P for the first contact.
34. Multiple operator stations are to commence each band with 001.
35. Receiving stations must record the ciphers sent by both stations being logged. QSO points will be on the same basis as for home stations, unless the receiving station is portable.
36. The practice of selecting the most profitable operational period within the allocated contest times is not in the spirit of the contest and shall result in immediate disqualification. The period of operation commences with the first contact on any band or mode and finishes either six or 24 hours later.

## Commonwealth Contest 1992 — Rules

1. **General:** The Commonwealth Contest is intended to promote contacts between stations in the British Commonwealth and Mandated Territories.
2. **Eligible entrants:** Licensed radio amateurs within the British Commonwealth or British Mandated Territories. Single operator entries only will be accepted and entrants may not receive any assistance whatsoever during the contest, including the use of spotting nets or other assistance in finding new bonuses. Entries will not be accepted from Headquarters stations, nor from stations using GB or other special event callsigns, or operating maritime or aeronautical mobile.
3. **When:** 1200 GMT Saturday 14 March 1992 to 1200 GMT Sunday 15 March 1992.
4. **Sections:** (a) multi band  
(b) single band

Single band entrants should claim points for contacts made on one band only, but are requested to submit details of QSOs made on other bands, for adjudication purposes. Multi band entries will not be eligible for single band awards.

5. **Frequencies/mode:** CW only in the 3.5, 7, 14, 21 and 28MHz bands. Entrants should operate in the lower 30kHz of each band, except when contacting novice stations operating above 21030 and 28030kHz. Crossband contacts will not count for points or bonuses.
6. **Contest Exchange:** RST and serial number, commencing with 001.
7. **Scoring:** Contacts may be made for points

with any station using a British Commonwealth prefix (see accompanying list), except those within the entrant's own call area. Note that for this contest, the entire UK counts as one call area, and therefore UK stations may not work each other for points. Each completed contact scores five points, with a bonus of 20 points for each of the first three contacts with each Commonwealth Call Area, on each band.

8. **Headquarters Stations:** A number of Commonwealth Society HQ stations (although not eligible as entrants) are expected to be active during the contest and will send HQ after their serial number to identify themselves. Every HQ station counts as an additional call area (and therefore attracts the 20-point bonus) and entrants may contact their own HQ stations for points and bonuses.
9. **Logs:** Separate logs are required for each band. Entries should be typed or written in ink on one side only of standard (A4) size paper or pre-printed log sheets, and should contain 40 QSOs per page. Columns to be headed: Time GMT; callsign of station worked; RST and serial number sent; RST and serial number received; bonus points; points claimed. Computer-generated logs are welcomed provided they are formatted as above.  
Duplicate contacts must be clearly marked and not claimed for points. Each unmarked duplicate contact found for which points have been claimed will result in the deduction of 55 points. Entries containing more than five such duplicates will be liable to disqualification.  
Each entry must be accompanied by a cover sheet indicating the section entered and the scores claimed on each band (also don't forget details of equipment, and your correspondence address!). Entrants making more than 80 QSOs are requested to include a checklist of the callsigns appearing in the log, sorted into alphabetical order and with either the serial number sent or the time of contact beside the callsign.
10. **Declaration:** Each entry must be accompanied by the following declaration, signed and dated: "I declare that this station was operated strictly in accordance with the rules and spirit of the contest, and I agree that the decision of the Council of the RSGB will be final in all cases of dispute."
11. **Address for logs:** RSGB HF Contests Committee: c/- S V Knowles G3UFY, 77 Besham Manor Road, Thornton Heath, Surrey CR7 7AF, UK.
12. **Closing date for logs:** Logs should be posted to arrive before 19 April 1992. Overseas entrants are advised to forward their logs by airmail, as late entries may be treated as checklogs.
13. **Awards:**  
(a) **Multi band** — The Senior Rose Bowl will

be awarded to the overall leader, and the runner-up will be awarded the Junior Rose Bowl. The Col Thomas Rose Bowl will be awarded to the highest placed UK station. Certificates of Merit will be awarded to the third-placed entrant overall, and to the leading station in each call area.

- (b) **Single band** — Certificates of Merit will be awarded to the leading overseas and UK entrants on each band.

#### Receiving Contest

Rules may be obtained from VK3ZC QTHR.

#### Call Areas

The following call areas are recognised for the purpose of scoring in the 1992 Commonwealth Contest:

A2, A3, AP, C2, C5, C6.  
G, GB, GD, GI, GJ, GM, GU, GW (all one area).  
H4, J3, J6, J7, J8.  
P2, S7, T2, T30, T31, T32, T33.  
V2, V3, V4, V5, V8.  
VE1, CYO (Sable), CYO (St Paul), VE2, 3, 4, 5, 6, 7, 8.  
VY1 (Yukon).  
VK1, 2, 3, 4, 5, 6, 7, 8, VK9L, 9M, 9N, 9X, 9Y, 9Z.  
VK0 (Heard), VK0 (Macquarie), VK0 (Antarctica).  
VO1, VO2.  
VP2E, VP2M, VP2V, VP5, VP8 (Falklands), VP8 (S Georgia), VP8 (S Sandwich), VP8 (S Shetland), VP8 (Antarctica), VP9, VQ9, VR6, V86.  
VU, VU4 (Andaman), VU7 (Laccadive).  
VJ, Z2, ZB2, ZC4, ZD7, ZD8, ZD9, ZF, ZK1(N), ZK1(S), ZK2, ZK3, ZL0, 1, 2, 3, 4, 5, 7, 8, 9.  
3B6/7, 3B8, 3B9, 3DA.  
4S, 5B4, 5H, 5N, 5W, 5X, 5Z.  
6Y, 7P, 7Q, 8P, 8Q, 8R.  
9G, 9H, 9J, 9L.  
9M2, 9M6/9M8, 9V, 9Y.  
GB5CC, RSCGB, HQ Station, VK3WIA, VIA HQ.

All calls operated from Commonwealth controlled areas of the Antarctic, VK0, VP8, ZL5 etc, count as one call area.

#### BERU 1991

A coverage of the 1991 results should appear in March *Amateur Radio*, but it seems 9H1EL, ZD8VJ and VE7CC took out the major placings, while VK6LW 5, VK2APK 6, VK2BF 7 and VK4XA were the leading VKs.

#### RD Results — Corrections

VK3EDF 16, should be in VK3 VHF section.

VK4ZGL 30, should be in VK4 VHF section.

VK7SA 88, delete entry.

ar

## VHF/UHF — AN EXPANDING WORLD

ERIC JAMIESON VK5LP — PO Box 169 MENINGIE 5264

#### All times are UTC

#### Some New Beacons

Freq	Call sign	Location	Grid square
50.015	PJ4B	Bonaire	FK52
50.015	4N3SIX	Slovenia	JN76**
50.018	V51VHF	Namibia	JG87
50.019	2B9PL	Papua NG	QI30
50.027	9H1SIX	Malta	JM75*
50.057	VK7RSB	Hobart	QE37**
50.092	HC2FG	Ecuador	EI97*

\* indicates the beacon has been reactivated

\*\* indicates a new beacon

There are no 2m beacons active in Melbourne except VK3RCW on 144.950, the CW training beacon. The Ballarat beacon on 432.535 is the only one operational on 70cm in VK3. VK6RTW on 52.565 is QRT.

432.450 VK5VF Mount Lofty PF95. This new beacon has a power of four watts ERP from a 6dB gain antenna with its main power concentrated from about 280 degrees through south to the south-east, and uses FSK keying. It provides a very strong signal at Meningie over the 120km path.

1296.450 VK5VF Mount Lofty PF95 is another new beacon with about one watt to a four-times waveguide radiator. At the time of writing no signal report is available as it will not be installed until 11/1/92. The present VK5 6m and 2m beacons have been taken out of service for upgrading after performing faithfully for more than 25 years.

#### Six Metres in Europe

Ted Collins G4UPS has advised the following: VK stations worked into Europe on 4, 5, 7, 10, 11, 12, 13, 15, 17, 18, 20, 21, 24, 25, 27 November, with those most heard being VK3OT, VK6PA, VK7JQ, VK8ZLX, VK8RH, VK2QF and some VK4s.

Ted adds the following items of interest: French Guyana has a new station, FY3FV — QSL direct to Box 999, 97300 Cayenne, French Guyana. Also, for PJ9EE, QSL via YB3CN. New station in Morocco is CN8BA in IM63. QSL direct to Mohamed Bouhannana, 114 Rue Chabab A Al Alia, Mohammedia, Morocco. 9X5NH is now operating from Rwanda.

SM7AED advised that Estonian operators now have access to six metres, and SM7FJE has already heard ES5IT. Cedric CT3FT from Madeira will activate six metres on receipt of a transverter from the UK. Czechoslovakia has been granted access to six metres from 15/12/91, with possible restrictions to some OK1 and OK2 operators due to TV stations. (Subsequent information tends to indicate that the start-up date for OK1 and OK2 was, in fact, 1/1/92... 5LP). QSL route for OE2UKL is Kurt Ullmann, Sonnenweg 13, A-5162 Obertrum a See, Austria. From Malawi 7Q7TT in KH74 is

now active, also 7Q7CM, 7Q7LA and 7Q7RM. A possible new station from Cuba is CO7RG. Joel CN2JP reported that on 15/11 at 1800 he had a 6m CW QSO with JW0A in Svalbard via the South Pole!

Don PY5ZBU has now confirmed 131 countries on six metres. He struck misfortune when he lost more than 100 QSL cards en route to the ARRL for the first ever DXCC on six metres. How discouraging. (Maybe VK operators should deliver their cards personally to the ARRL when their time arrives... 5LP).

One comment by G4UPS which appealed to VK5LP for its fairness and consideration for others less fortunate, was that on 2/11 he heard CX8BE, LU8AJK, LU8AHW, LU3DCA, LU7DZ, HC5K, HC1BI, PZ1AP, 9Y4VU, PT9FH and several weak PU/PY stations and PYSCC at 5x9. "As I had worked most of these stations before, I left them alone." Very commendable!

At 1125 on 2/11 9H1CG worked KP2A, KP4 and PJ9. 8/11 at 120 5V7JG (Togo) and TU2OJ (Ivory Coast) both 5x9 working into Europe. 14/11 at 1422 XN1YX turned out to be VE1YX using a special prefix. 17/11 at 1909 G4UPS worked 9J2HN in Zambia at 559.

There are now 127 Swedish stations on the current list with prefixes SK0, SM0, SM1, SM2, SM3, SM4, SM5, SM6, SK7, SM7, S18 and SJ9. Information from SM7AED and G4UPS.

#### More from Europe

There seems little doubt that if you want to work consistent 50MHz DX, you should move to Europe, or at least the British Isles! Did you know that at least 120 countries have been worked on 50MHz so far from the UK? The way they do it is this typical example from Geoff G4JICD on Jersey Island for 2/11/91 who says 1100 UTC: What an opening! F77 beacon in at 9+. The band was open from 1100 to 1430 when I went QRT, all signals were S9+ even the Ws via scatter; worked lots of PYs 2, 5, 7, 9, LU, PT9FH, PP5WL, PJ9EE, H18A, VE1YX, W1JR, P43AS, PJ4/WA3LRO, PJ2KI, TI2HL, PJ2BR, K1JRW, N3BBI, W4s, W2s, CX8BE, many many LU5s, HC5K, CN8ST, 9L1, YV4DDK, YV4AB, KP4EOR, KP4EIT, KC5M and missed CE, CP6, TN and YS! Does the man have time to eat? ... 5LP.

Geoff had good propagation to extended parts of the world on almost every day through November, although he considered three of his October contacts as outstanding — 14/10 to VK2FLR, which gave him the British Isles distance record of 16235km; 18/10 to VK5NC and VK3LK. On 31/10 he worked ZA1ZLZ and ZA1ZDB in Albania for a GJ first and a new

country. (Note: Unfortunately, it seems likely these contacts will not be counted for DXCC as ZA1A was the only station permitted operation from Albania and this was limited to 20 metres. There may be more on this later ... 5LP).

Other bits from Geoff GJ4ICD and *The UK Six Metre Group Newsletter* include that Gerrard 5V7JG from Togo came on six metres for the first time on 21/9/91, and that day worked 9H1, SV, TA, I, A22 and PY. He runs 25 watts to a five-element beam. On 28/9/91 Gerrard made 270 QSOs with Europe, and during his first week on the air worked 20 DXCC countries in three continents! He expects to operate from there until February 1992.

Julio D44BC has indicated he will try to be more active on six metres in future. Edgardo YS1ECB from El Salvador is still active and has been working the TE path to South America. As Dave 9L1US has left Sierra Leone, that leaves the Radio Club beacon 9L1SL only. Dave will reappear in Botswana in February 1992, but will be a long way from A22BW.

There seems to be a difference of opinion between the ARRL and the RSGB Awards Managers over 5NO, 3X1 and TK. The ARRL will accept them, but the RSGB will not! Ian G4OUT says that no foreign nationals visiting TK (Corsica) and operating from there will count for any 50MHz awards, as no PTT permits were issued. IT9 (Sicily) is acceptable to the RSGB but not the ARRL.

The absolute dedication to amateur radio and six metres in particular is shown by the fact that Lawrence GJ3RAX and Geoff GJ4ICD between them have undertaken the construction of five 50MHz beacons, and have also requested the return of several beacons which are no longer in use so they may be deployed elsewhere.

*The UK Six Metre Group Newsletter* says there are now 45 countries in Europe activated on six metres with 16 countries yet to be permitted operation. Six metres from Poland seems some distance away. LA3A2 (Monaco) has been worked on six, and there is a possibility HA (Hungary) may yet come on.

## The Australian Scene

As reported above, a limited number of Australian amateurs has been sharing in F2 DX contacts entering from both sides of the country. There were many openings to Europe during November, with these tapering off in December, but not entirely disappearing.

On 26/12 Steve VK3OT worked YU and SM, and from then through to 6/1 to him there have been almost nightly occurrences of small openings to Europe, perhaps for half an hour or so from about 0830, a typical one being on 6/1 to Finland when Steve worked OH3MM, a much sought after contact with the President of the Finland Amateur Radio Society. There

was also an OG1 which appeared to be a prefix for a special occasion. VK3LK and VK5BC have been heard sharing these contacts, which at times were made difficult due to the number of VK stations on Es using the 50.110 DX calling frequency.

During November there have been some good Es openings. VK4, 6, 7 and 8 have been prominent in VK5, especially on 26/12 at 0130 when VK8ZLX was heard with a rock crushing signal! On 11/11 VK5RO worked W5 and W7; on 17/11 VK5BC worked PA0 and ON4. On 4/12 KH7 Kure Islands was worked by VK3, 4 and three VK6s. On 15/12 VK4s spread over most of their eastern coastline were working ZLs. JAs were still almost a daily occurrence into VK5, mostly around 0200, but not for long periods.

On 4/1 for most of the day Es provided VK1, 2, 3, 4, 6, 7 and 8. On 6/1 ZL2TPY and others were involved in a big opening to W when many states were worked.

## Two Metres and Above

There have been some good 2m contacts. On 3/12 VK5ZVS using 10 watts FM from Whyalla contacted VK7NRC. VK5AKK on 23/12 heard the Sydney beacon VK2RSY at 0916, and on 24/11 at 0908 heard the Cairns beacon VK4RIK. On 4/12 he had a good contact with VK6AS at Esperance.

Mark VK5EME reports active stations during the past month have included VK5s AKK, AKM, RO, ZDR, AVQ, PO, ACY, NC and EME and VK5KK from 29/12. With the start of the Ross Hull Contest on 22/12, contacts were exchanged with VK5ZVA at 0730 on 144 and 432; 1030 VK5PO portable at Kapunda, 144 and 432, then same with VK5AKK. At 1050 VK5AKM on 144, 432, 1296 and 2304, followed by VK5ACY and VK5EN on 144. On 23/12 from 1030, 144 contacts with VK5MC, VK5AVQ, VK5PO, VK5ZGC, VK5ACY and VK5KAF (both on Kangaroo Island), VK5ZPS and VK5NC.

A big surprise awaited VK5ZDR, VK5AKK and VK5EME who were home on Christmas Day when, between 0640 and 0710 144MHz opened to VK4 (up to 2000km) with 5x9 signals to VK4s QV, TDR, LE, ZWH, ZDO, DH, ACE and VK3ZQB, followed later at 1209 with VK5AKK on 144, 432 and 1296.

From 26/12 Mark VK5EME decided to operate portable from a high site at Summer-town in the Mount Lofty Ranges, taking equipment with him to work on 144, 432, 1296 and 2304MHz! From 0442 he worked VK5s AVQ, ZDR, RO, AIM, ZYK and VK3AOS, all on 144 and 432, plus VK5AVQ on 1296. Similar results on 27/12, plus VK3YLW also on 1296.

Obviously by 28/12 Mark had stirred the pot somewhat and was amazed at the number of VK3s who had come out of the woodwork to work him. He had contacts, mostly on 144 from 2123 with VK3s YLV, UM, AOS, AFW, DUQ, LK, DUT, BRZ, TG, AIH, AMZ, AXH

and VK7XR on 144 and 432 and VK7DC on 432. VK5NY and VK5NC were there also, the latter on 144, 432 and 1296. VK3s YLV, AFW and AOS were also on 432. From 0932 a string of VK5s were worked, including VK5AKK on 2304.

VK5EME's final effort was on 29/12 from 2249 to 2336 to VK3AUG, VK3UM, VK3AOS and VK5s NC, NY, DK, AVQ, ACY, AKK and from 0916 VK5s ZBK, AKK, AIM, AVQ, AKM and KK, the last year being worked on four bands.

During years past VK5LP has operated portable on many occasions, and I know the logistics required to set up a station to work on four bands. Each day it took Mark VK5EME three quarters of an hour to travel to his chosen site, then set up his gear and be operational, preferably by 2100 UTC or 7.30am local time, then pack up and go home after 10pm local and do the same thing again the next day. That's dedication, and I am glad to note he was rewarded with some good contacts on all bands.

## EME News

Doug VK3UM reports on his 70cm EME activities for 23 and 24/11/91. Faraday rotation locked him out of the European window. Despite this, his final tally was 68 contacts which included 14 initials, bringing his initials tally to 164.

New stations worked on 23/11 between 1115 and 1329 were N21QU, AA47J, ZL3AAD, N7ART, W0KJY, W7HAH, K3EAV, KB0HH, WA6BJE, WA9FWD and from 1755 to 1851 OK1KIR, JR4AEP, DL9KR, F1FEN and DL9EBL. On 24/11 at 1236 K5AZU, 1308 KB4WM and 1858 F2TU. Signal levels were between 439 and 569, which seems to indicate reasonable conditions.

Doug recently used fine emery paper to polish the elements of his array and immediately ran into complaints from the golfers next to his property who claimed the glare from the aluminium was upsetting their view of the course. A new course rule was added to allow for a ball drop without penalty to avoid the glare! Did you know VK5LP is less than 200 metres from a golf course but I don't have such a large array!

## General and Closure

This month there is a lot of news from overseas, particularly Europe, and there will be again next month. I consider it more valuable at the moment to tell readers what is still around to be worked rather than reporting VK contacts to countries already worked, although VK reports are always welcome. Because of their locations, G4UPS and GJ4ICD have already worked hundreds of stations, and are now prepared to do more listening on six metres and report what new stations may be appearing in the future, and for this we should thank them.

Two thoughts for the month: "I don't want

everyone to like me; I should think less of myself if some people did" and "You can tell more about a person by what he says about others than you can by what others say about him".

73 FROM THE VOICE BY THE LAKE

## 50-54 MHz DX Standings

DXCC countries based on information received up to 20 December 1991. Crossband totals are those not duplicated by two-way contacts. A callign cannot be displaced from its existing position except by another with a higher confirmed number.

Column 1: 50/52MHz two-way confirmed contacts

Column 2: 50/52MHz two-way claimed as worked but not confirmed

Column 3: Crossband 50/52MHz to 28MHz confirmed

Column 4: Crossband 50/52MHz to 28MHz worked

Column 5: Countries heard on 50/52MHz

	1	2	3	4	5
Callign					
VK4ZJB	84	86			
VK3OT	78	81			4
VK4BRG	78	82			
VK2OF	67	74			
VK4ALM	65	67			
VK2BA	62	63		4	
VK4ZAL	58	64			
VK8ZLX	45	60		1	
VK3AMK	45	47			
VK8GB	42	42			13
VK6KH	41	42			4
VK5RO	39	48		3	
VK3AWY	34	36			
VK5LP	32	33			9
VK3NM	31	34			
VK3AUJ	31	31			
VK6RO	31	32		1	12
VK2DGG	25	26		2	13
VK4KZ	23	34			
VK3KO	23	25			2
VK6PA	23	23			
VK4TL	22	23			
VK2KAY	21	23			
VK2BNM	20	21			
VK9LG	20	20			
VK4BJE	19	25			
VK4KAA	19	20			
VK7JG	18	20			2
VK3TU	17	19			
VK2ZRU	16	19			4
VK4ZSH	16	16			
VK9LE	14	14			
VK6OX	10	10			1
VK5KL	06	11			1
Overseas					
JA2TTO	48	48			6
YJBRG	25	25			

The next list is planned for the August 1992 issue. Copy, additions or alterations to me by 15 June, please.

As in the past, where I believe a situation determines, I reserve the right to seek confirmation of any claimed QSLs. In the meantime, I thank those contributors who continue to support their claims with photocopies of QSLs or have them certified by other amateurs. It helps!

ar

## FTAC NOTES

JOHN MARTIN VK3ZJC FTAC CHAIRMAN

### Data Base

This issue contains an updated version of the beacon and repeater data base. Most of the changes since the list was last published in the Call Book have been to the VK2 and VK4 lists. I would be grateful if all beacon and repeater licensees could check the information in this issue and notify any changes or corrections to me as soon as possible. Please send details to FTAC, PO Box 300, Caulfield South, Vic 3162. Alternatively, any information can be sent by packet to VK3ZJC@VK3BBS.

### Channel 5A Raises its Second Ugly Head

I have recently noticed strong QRM on the lower end of the 2m band. This is due to an ABC TV translator 100km away changing

over to stereo sound. The second audio sub-carrier is on 143.990MHz, and with 50kHz deviation it extends well into the 2m band.

This situation will become more serious as all ABC stations change over to stereo, and it will be particularly severe in areas such as Newcastle. I believe the 5A station there has a 25kHz positive offset, therefore the second audio carrier is on 144.015MHz.

There will also be a parallel situation on six metres, with Channel 0 stations radiating signals within our exclusive 52-54MHz allocation.

I would appreciate any information on TV stereo interference from readers. Amateurs living in Channel 5 areas may also be able to advise whether their local TV stations are radiating interference in the 108MHz aircraft band.

ar

## ALARA

JENNY ADAMS VK3MDR

*Belated New Year's greetings to all. Somehow, in the Christmas season, I missed the deadline (now they are written on the calendar). Welcome to new members Maxie DJ4YL, Pixie K2KPC, Irene Wilson, Vicki VE7DKS, and rejoining by Joy VK4JOY.*

*Start saving, as we now have a date for the ALARAMEET. It is to be on 2-3 October 1993, and will be held in Castlemaine, Victoria. From Jenny VK5ANW:*

### Stop-Off in New Zealand

On the way back to Australia from our UK/

USA trip, my daughter, Wendy, and I had a six-hour stop-over in Auckland between flights. I had earlier suggested that perhaps some of the New Zealand YLs might like to come out and meet us, but had been put off by someone who told me "it would be too hard getting in and out through Customs". So, you can imagine my surprise when, at about 7.30am on Thursday 1 October, I was paged and told to pick up a telephone. The voice at the other end informed me there was a lady with him with whom I had spoken on "ham radio", and the next moment I was talking



L to R: Cecilia ZL1ALK, Jenny VK5ANW and Alma ZL1WA at Auckland Airport on 3 October 1991.

with Alma ZLIWA. Alma said that Celia ZLIALK was also on her way so, at that point, I decided perhaps I had better make the effort and find out how to get through Customs. With the help of several very nice officials we were soon face to face with Alma and Celia.

After a cup of coffee, Celia presented me with a WARO teaspoon, before having to head off to work. Alma then suggested that as we still had three and a half hours to go, we might like to take a drive around Auckland's suburbs to break the monotony of sitting in the airport. To this we readily agreed, and were soon enjoying some of their magnificent views. All too soon we were heading back to the airport, where Alma gave Wendy and me each a calendar with views of NZ, and a map of Auckland so we could see where we had been. I would like to convey my thanks to Alma and Celia for getting up at that unearthly hour and giving us a pleasant and unexpected end to our wonderful trip.

*Marie VK5BMT, our president, enjoyed her wandering around Australia, and for the records a few more faces to put to call signs with whom you may have made contact.*

*The 16th Australian Scout Jamboree held in Ballarat has just finished. My husband Philip VK3JN1 worked in Supply & Transport, and it was terrific to be able to talk to him*



*L to R: Mavis VK3BIR, Maria VK5BMT and Coral VK8KCH pictured at Hibiscus Shopping Centre, Darwin, on 4 September 1991.*

*on 80 metres most evenings. Yet another great reason for being an amateur radio operator. I don't as yet have a report on the Jamboree amateur station VK3SBJ.*

*Till next month, with more on the Jamboree.*

33/73  
ar

## AMSAT

**BILL MAGNUSSON VK3JT - 359 WILLIAMSTOWN RD YARRAVILLE 3013**

**PACKET VK3JT @ VK3BBS**

### **National Co-ordinator**

Graham Ratcliff VK5AGR

**PACKET VK5AGR @ VK5WI** Please take

note of the AMSAT information nets:

**AMSAT AUSTRALIA net:**

**Control station VK5AGR**

Check-ins commence at 0845z on Sunday nights

**Bulletin commences at 0900z**

Frequencies 3.685MHz or 7.064MHz. At present 7.064MHz is used.

**AMSAT SW Pacific net:**

2200z Saturday on 14.282MHz.

Experienced satellite users and newcomers alike are welcome on the nets. A large body of experience is on hand to answer queries. Listen to the WIA Divisional broadcasts for regular AMSAT information.

**AMSAT Australia Newsletter and Computer Software:**

Satellite users, whether experienced or newcomers, will benefit by subscribing to the AMSAT Australia newsletter and software service. The newsletter is published monthly by Graham VK5AGR. Subscription is \$20 payable to AMSAT Australia, addressed as follows: AMSAT Australia, GPO Box 2141, Adelaide 5001

The newsletter provides up-to-date infor-

mation on all current and planned satellite activity. Graham also provides a first class software service for satellite users. New software is reviewed regularly in the newsletter.

### **AO-10 Anniversary**

Veteran amateur radio spacecraft Oscar-10 was launched in June 1983. Despite a lot of drama it's still going strong. So, what's the anniversary? Read on. Known as phase 3B during design and construction, it followed the disastrous launch of phase 3A which ended up on the sea-bed taking a lot of broken hearts and dreams with it. Fortunately those in charge, being made of stern stuff, saw to it that 3B (Oscar-10) went ahead and the launch was successful. The whole amateur radio satellite community breathed a sigh of relief. Oscar-10 had a design life of about five years. It was a wonderful device. I can remember working it near apogee, 38000km away with only 100 milli-watts of uplink power into a 20-turn helix on the 70cm band! It became apparent soon after launch, however, that the main memory chip was gradually being corrupted by radiation. Due to a problem during final positioning its orbit wasn't ideal and it was spending more time than was intended in and around the Van Allen belt. As time went on,

less and less memory was available to the control stations, and by December 1986 the spacecraft was virtually out of control. No transponder schedule could be implemented, and control stations could only sometimes command the mode B transponder on and off. But that was over five years ago. No-one suspected that Oscar-10 would still be operating in 1992, but it is, and the fifth anniversary of that event is well worth celebrating. The mode B transponder switches itself on and off as power becomes available. Twice a year, the sun angles are favourable and the old veteran springs into life for three months or so. James Miller's extrapolation of the last known attitude allows us to have a pretty good idea of squint angles and, from observations by Graham VK5AGR, it appears that at most times the omni-directional antennas are in operation. Excellent contacts can still be made via Oscar-10; not half bad from a spacecraft that's been out of control for five years.

### **AO-21 Problems**

The "user pays" principle strikes again: Oscar-21/RS-14/Radio-M1/Rudak-2 (let's just call it AO-21), a joint project of Amsat-DL and Amsat-U, was launched on 29 January 1991 from Plesetsk, USSR. It is a "sub-tenant" (I guess that means that it's bolted on) to a GEOS class Russian geological and scientific research satellite which is called "INFORMATOR-1". Until recently all Russian military and civilian satellites were controlled from a main command centre under military



control. Now it seems the centre has been converted into a civilian organisation, and it has to be — wait for it — cost efficient. This means that control has to be paid for by the user. AO-21 has been placed in DUTY mode with only a CW beacon operating on 145.948MHz. The controllers are refusing to command any part of INFORMATOR-1 until the user pays, and that includes AO-21. Amsat-U and Amsat-DL are in discussion with authorities to resolve this problem. Stay tuned and keep your fingers crossed!

## UoSAT-2 (UO-11) Report

UO-11 bulletins have returned. It was carrying a Christmas greetings message in December. Several times recently it has been switched to full-time telemetry frames. Using a program like DTLM and a G3RUH demodulator, it's fascinating to watch the engineering data being updated in real time as the satellite goes over your QTH. You can tell exactly when it makes the transition from daylight to darkness or vice-versa, as it often does in VK. Now there's a very real check of your tracking software and hardware. You can confirm the tumble rate given in the diary data or watch the 60 analogue and 96 digital channels being constantly read and updated on the telemetry stream. Since there are a number of formats and you're never quite sure just what type of telemetry is going to come over, it's wise to record the audio signal whilst decoding for playing back several times through the demodulator after the pass. Signals from UO-11 are strong enough to receive on a non-directional antenna if you have a quiet location. Beacons are on 145.825MHz, 435.025MHz and 2401.5MHz. On one occasion during our January mountaintop expedition the telemetry indicated that all three

beacons were commanded on at the same time. This is unusual. The 435MHz signal was very strong. We had no gear for listening on 2.4GHz, so I can't comment on signal strength etc. Can anyone help?

## Siderial Times

Some early tracking programs, particularly those based on Dr Tom Clark's "Basic orbits", require a variable called GMST or GST or G2 to be updated each year. This is the Greenwich Mean Siderial Time calculation. It is used to compute Earth-based co-ordinates

from right ascension figures. The value of GST for 1992, Jan 0, 00:00 UTC is 0.27477847. I can give you a listing of a basic program to calculate these figures if you contact me.

The next few years are as follows:

1993GMST = 0.276853278

1994GMST = 0.276190177

1995GMST = 0.275527075

It's a figure derived from the difference between the Earth's rotation rate in respect to the Sun and the background starfield. Don't be alarmed! We aren't slowing down that much. The figure oscillates around a mean over a period of several years. Our real slowdown rate is very much less than that.

## Satellite Activity for October/November 1991

### 1. Launches

The following launching announcements have been received:

Int'l No	Satellite	Date	Launch Nation	Period min	Apog km	Prg km	Inc deg
1991							
075A	INTELSAT VI F-1	Oct 29	USA	716.1	35738	453	4.4
076A	USA-72	Nov 08	USA				
077A	COSMOS 2165	Nov 12	USSR	113.9	1436	1396	82.6
077B	COSMOS 2166	Nov 12	USSR	114.0	1440	1408	82.6
077C	COSMOS 2167	Nov 12	USSR	113.9	1437	1402	82.6
077D	COSMOS 2168	Nov 12	USSR	113.8	1434	1392	82.6
077E	COSMOS 2169	Nov 12	USSR	113.8	1432	1385	82.6
077F	COSMOS 2170	Nov 12	USSR	113.8	1432	1385	82.6
078A	COSMOS 2171	Nov 20	USSR				
079A	COSMOS 2172	Nov 22	USSR				
080A	STS-44	Nov 24	USA				

### 2. Returns

During the period 57 objects decayed, including the following satellites:

1972-011A	COSMOS 476	Oct 25
1987-012A	ASTRO-C	Nov 01
1991-047B	LOSAT-X	Nov 15
1991-066A	COSMOS 2156	Nov 17

BOB ARNOLD VK3ZBB  
ar

## HOW'S DX

STEPHEN PALL VK2PS - PO Box 93, DURAL 2158

In the "good old days", say 30 years ago, DXing was a pleasure. One chased a few rare ones here and there, as individual nets, lists and DXpeditions were rare. Today, DXing is still a pleasure, but it is really hard work. Both the DX station and the ever-increasing number of DXers are under pressure and strain. The magical number of DXCC countries — 323 at present — chased by the many thousands of hopefuls and their sometimes undisciplined behaviour, sometimes questions the value of these contacts. Today, expeditions go to the remotest and most hazardous places on Earth in the name of "DXing". Transport, equipment, power, fuel, food, even weapons (for "protection") etc have to be organised. These expeditions cost tens of thousands of dollars and sometimes even hundreds of thousands of dollars. Voluntary donations and contributions, in both equipment and cash,

are eagerly sought. QSLing must be direct, with appropriate return postage and the occasional "green" stamp. However, there is no guarantee that one gets a return card on every occasion, as many DXers can attest. One can be considered to be lucky if his or her return rate reaches 80 percent.

Why all this rush? All this eagerness? All this waiting? Why all the bleary eyes of the sleepless nights? Just to get a piece of printed paper which says that we worked 300 DX countries, or our name will now appear on an honour roll? To whom do we want to prove this fact? To ourselves? Most unlikely! One should know how many DX countries one has worked and, after all, there are the cards to prove it! To prove it to others: friends and other DXers; to the world? To make others jealous?

It is a sorry state of affairs and sign of changing times that today human endeavour

and striving for excellence are not recognised, except when one has a piece of paper to prove it!

## Albania — ZA

I was about to forward the material for this issue to the editor, when mail brought a letter which throws some new light on the activity of the ZA1HA station. The six-page letter, which is actually a description of their trip and experiences in Albania, was written by Dodi HA6NF, one of the operators of the station ZA1HA. Space does not permit publication of the letter in full, but here are a few facts in contrast to questionable rumours.

The ZA1HA operation was the result of a joint written declaration of co-operation and a binding contract between the Hungarian Amateur Radio Society (MRASZ) and the Albanian Radio Amateur Society. This document was signed and ratified back in October 1990, after lengthy negotiations which began almost a year previously. In this document, the MRASZ accepted responsibility to build a complete amateur radio station in ZA land

and to train Albanian operators on the site. In return, the Albanians agreed to facilitate the operation of the HA DXpedition in ZA. It is now history that the international expedition ZA1A started the Albanian operation one week before the Hungarians. (See AR March, Nov and DEC 1991 issues).

The ZA1HA group was allocated a QTH by the Albanian officials, following a discussion with Mr Agim Zeka, Assistant Minister of Culture, Youth and Sport in Tirana, who has been working on this project since 1990, and Mr Myftar Fana, President of the Albanian Radio Amateur Society. According to HA6NF, the ZA licences which were issued to the Hungarians by the Ministry of Culture, Youth and Sport were the first original licences issued to foreign amateurs — the licences issued by the Albanian PTT came later.

According to other sources, independent of HA6NF, the Albanian Council of Ministers has now taken away the right from the Albanian PTT to issue amateur licences and ordered the army not to hinder amateur activities. Again others stress that, according to present Albanian law, the Ministry of Culture, Youth and Sport is the only authority to issue amateur licences.

The ZA1HA team kept its part of the bargain. They trained operators and left behind a complete working amateur radio club station, which is still in use and which had its licence issued by the same authority as ZA1HA.

HA6NF concludes his letter with the following: "You should know and understand and please tell everybody that Albania is *not* the place where you could operate a radio transmitting station *without* a licence!"

There is now a big question mark hanging in the air: Why has the DXCC Board not yet approved the various Hungarian ZA operations? The activity took place in September/October last year, and we are writing now in February 1992. All the necessary documentation is with the DXCC Committee awaiting a decision. When will that be forthcoming?

## Sydney City Sesquicentenary — V1150SYD

This is a special event station operated on behalf of the VK2 Division of the WIA during 1992. It will show up on various frequencies at various times, including "nets".

On 20 July 1842 the town of Sydney was elevated from the status of a town — held since 1788 — to that of a city. Throughout 1992, Sydney will celebrate the 150th anniversary of this important milestone in the history of the city with various activities.

The VK2 Division of the WIA, with headquarters in the City of Parramatta, which is part of the greater Sydney metropolis, will participate in these celebrations by activating the special event station: V1150SYD.

The preferred route for all QSL cards will be by direct mail to: WIA Special Event Sta-



*Some of the operators of ZA1HA. L to R: Otto HA1AD, Janos HA8UB, Gyuri Hagnd, Geza HA4XG and Dodi HA6NF.*

tion, PO Box 1066, Parramatta, NSW 2124, Australia. VK stations should send a SASE; DX stations should include also one IRC or one "green" stamp for return postage. Those who QSL via the Bureau should send their cards to the QSL Manager: VK2WI.

## South Sandwich — VP8

The latest bulletin on this expedition (22 March to 6 April) arrived mid-December. Seven operators are already on the roll; the remaining three will be selected in the next few weeks. All of them have extensive DX, contest, Antarctic and Arctic experience. All the required paperwork was submitted and approved by the ARRL. The ship, *Abel J*, an American research and scientific vessel, is already on its way with the amateur equipment. This ship is now headed into the Antarctic. The team will leave London on 9 March and will sail for the South Sandwich group on 14 March, where it expects to land on Thule Island. There will be four complete HF stations, three linear amplifiers, nine antennas for various bands, three power generators and over 800 gallons of fuel. It is planned to operate from 160m through to 10m and possibly on six, in the SSB, CW and RTTY modes.

The total cost of the expedition is \$104,000; each operator is contributing \$5000 — the balance has to come from donations from the amateur community. If you have never contributed to such an expedition, please con-

sider doing so now. Send your donation to: Gerry Branson AA6BB, 93787 Dorsey Lane, Junction City, Oregon 97448, USA. The expedition is well aware of the needs of the VK-ZL-Pacific area amateurs, and promised to visit the various nets for this purpose (21205 and 14222). Let's give them a helping hand by digging deep into our pockets.

QSL route: CW and RTTY QSLs go to: KA6V, and SSB QSLs go to: AA6BB. Computer processing is planned, so please do not make multiple contacts on the same band and in the same mode.

## Thailand — HS0ZAP

In a note received from Thailand from Lloyd W6KG and Iris W6QL, they advise about their successful operation from Bangkok, as HS0ZAP. John HS0ZAA was instrumental in getting the reciprocal licence for Iris and Lloyd, being the custodian of the club station HS0AC. Vikrom HS1HB, President of RAST, was also a great help. The Colvins were operating from the club station using their equipment and the club antenna systems. They made 1500 contacts with 120 countries. After attending the SEAnet convention in Chiangmai, they proceeded to Vietnam and then to Cambodia, where they started operating as XU8XG.

QSL for HS0ZAP and XU8XG goes to: YASME Foundation, PO Box 2025 Castro Valley, CA 94546 USA.

## Mount Athos — SV/A

This religious community on the shores of the Aegean Sea (see AR January 1991) is recognised as a separate country for DX, and has only one officially approved resident operator: The Monk Apollo, SV2ASP/A, Monastery Dochierou, GR 63087, Dafni, Greece. Visiting amateurs must obtain a permit from the Council of Government of the Holy Community of Mt Athos. This is rarely given. In April last year, Baldur, a well known German DXer, operated as SY/DJ6SI from Mt Athos, using his universal European CEPT licence. Ever since that operation, there has been a dispute in DX circles whether Baldur had legal permission to operate or not.

In the beginning, the DXCC Desk of the ARRL approved the activity. In August last year the acceptance of Baldur's cards was suspended pending additional information. At the end of October, the DXCC resumed the acceptance of the SY/DJ6SI cards. In November the Monk Apollo, who usually was quite active on the European DX net, became "inactive". Rumours have it that the Chief Abbot of the Holy Community has placed a "no activity" restriction on the monk until the DXCC decision is reversed. Depending from where the rumour originates, one can hear the following "news": allegedly the Greek Ministry of Transport and Telecom was reported to have said that CEPT licences are not valid on Mt Athos. Others say — and this cannot be

verified — that Baldur had permission to operate CB radio from Mt Athos for a family emergency situation; yet again others say the Monk Apollo has written a letter to an important DX Association saying he is absent from the bands "protesting" (against) the recognition of the invalid emission of DJ6SI by ARRL from Mt Athos without the permission of the Holy Community.

On 14 December Apollo made a brief appearance on the EU-DX Net and more or less repeated his protest, but did not take part in the net and stopped transmitting.

It seems the DXCC committee has a number of problems on its hands. It has to resolve the Mt Athos problem and also has to decide whether it will accept the various Hungarian operations in Albania.

However, the basic unanswered question remains: Is it so easy (or "difficult") to obtain permission to operate from Mt Athos, why did the Greek DXers not use the opportunity in the past to do so?

## Future DX Activity

- \* Jon VK4CY was operating again from his home QTH: Lamb Island from 30 December to 18 January, and hopes to operate from there around Easter, mid-winter and spring from the VK4 location. Jon at present is employed in the Sydney area and can be reached on the 2m and 70cm repeaters as VK2CCY.
- \* Dwight EL2W is now active. He was heard on 18MHz QSL to: Dwight, Radio Station ELWA, B92, from Nrovio, Liberia, W Africa.
- \* The Hungarian boys with their bus (HA5BUS) were active on CW from Tehran for five days as EP/HA5BUS. They are now proceeding to India.
- \* VK0WD Wayne (VK7WD) — who is on board the supply ship *Icebird* calling at the Casey base and at Macquarie Island — is "icebound" and might not be able to operate due to lack of time. The ship is stuck in solid ice six metres thick; the weather is bad and, at the time of writing, his expected time of arrival at Macquarie is not known. (*Ship now free. Ed*)
- \* Graham VKONE is now on Casey Base in Antarctica. QSL to: VK9NS.
- \* The American/Vietnam XV0 DXpedition has been called off because of licensing difficulties.
- \* Toensten SM7NFB, who will be in Vietnam for two years, is active as XV7TH. QSL to: SK7AX.

## Interesting QSOs and QSL Information

- Note: callsign, name, frequency, mode, UTC, month.
- \* HS0ZAA-John-21004-CW-0810-Nov. QSL to: KM1R: MJ Castellano, 631 Great Hill Rd, Guildford, CT-06437, USA.

- \* YA2CW-Jacky-21014-CW-0545-Nov QSL to: F2CW Jacky Calvo, Le Bois de l'Essard, F-16200, Nercillac, France.
- \* JT1AA-Gan-14009-CW-1210-Dec. QSL to: Gan, Box 138, Ulan Bator 23, Mongolia.
- \* CN2AQ-21039-CW-0830-Dec. QSL to: Sjoerd Quast, Route de Rabat, PK 18500, Box 40, Tangier, Morocco.
- \* 7P8SZ-14030-CW-2235-Dec. QSL to: Ray, Box 333, Masero 100, Lesotho.
- \* J28FO-21010-CW-1220-Oct. QSL to: F6FNU Antoine Baldeck, BP14, F-91291, Arpajon, Cedex, France.
- \* 9J2SZ-21009-CW-1315-Oct. QSL to: SP8DIP Tad Pawlasek, U1 Alexandru Szymanskiy 36, M10, 23-200 Krasnik Lubelski, Poland.
- \* T20VJ-14007-CW-1323-Nov. QSL to: G4ZVJ Andy Chadwick, 3 Park Villas, Monkhouse, Cheadle, Staffs ST10 1HZ, England.
- \* Z2AHS-14009-CW-0430-Nov. QSL to: Box 4119, Harare, Zimbabwe.
- \* ZK2JD-John-14226-SSB-1113-Nov. QSL to: John Duncan, PO Box 37, Niue via New Zealand.

## RTTY News

As usual, Syd VK2SG has sent me quite a list of RTTY contacts going back five weeks. Here are a few interesting ones, but please note the change of format: UTC, QRG, call, mode, QSL info.

- \* 1001-21087-CU3EM-Paul Borges, Box 158, Angra City, Azores.
- \* 0332-14082-XQ0X.
- \* 1122-21083-5VTRC. QSL to: OZ1LLC.
- \* 0035-14082-VP25EHF. QSL to: KA3DBN.
- \* 0209-21072-TY1FS-ARQ.
- \* 2141-14085-J68AS. QSL to: N9AG.
- \* 0011 14085 TJ1MR QSL to: F6FNU
- \* 2325-21081-J37MB. QSL to: VE7YL.
- \* 0618-14074-5N8AL. QSL to: DJ2VJ.
- \* 1534-29089-ZD8LII. QSL to: Steve Hodgson, PO Box 2, Ascension Island, Atlantic Ocean.

Have you sent me a note about the usefulness of this section of the DX column? (See AR Jan 1992).

## From Here and There and Everywhere

- \* Australia Post has presented a New Year's gift to those who use its services. Overseas air mail rates to all places in the Pacific Basin and nearby Asia have been increased. Ask for details from your friendly neighbourhood post office.
- \* Peter VE8PW (AR Nov '91) advised on his Christmas card that he will be in VE3 for a few months before going up north again to Zone 2.
- \* Unconfirmed rumours have it that cards for the MY Island (4J1FS) are being processed and will be posted soon.
- \* Jack T30JH, after a short visit to the

Federates States of Micronesia, callsign used: V63JH, returned to Tarawa. Whilst in Ponape, he made about 1000 QSOs, mostly six metres, the majority of them JAs.

- \* Jeanne Claude FT4CW of Crozet has closed his station and returned to France. The new team at Crozet does not have an amateur operator.
- \* The powerful religious broadcaster HCJB, near Quito Ecuador, celebrated its 60th anniversary on Christmas Day 1991. Beside the religious side of things, the station also features DX programs, news and cultural information and even has a weekly radio amateur segment on its program. Among its broadcast personnel there are a number of amateurs. It is not well known that the cubical quad so widely used by radio amateurs was invented by Clarence Moore, an HCJB engineer, in 1939 to overcome the problems of broadcasting in rarified air at 9300 feet in the Andes. The station's 12 high-powered transmitters were reduced to a mere 1.5kW on 6 December, from 2100 UTC to 0300 UTC on 8 December, to allow the organisation to celebrate this occasion on the amateur bands, activating the special call HC60JB. If you were lucky enough to work them, send your card with return postage to: HCJB, Casilla 17-01-00691 Quito, Ecuador, South America.
- \* The documentation for Romeo's XY0RR DXpedition has been approved by the DXCC Desk.
- \* The former "East" German "Y" prefixes will be used until the end of 1992.
- \* Jack T30JH was probably the last foreign operator who was able to use the C21NI club-station facilities on 3 November last. Jack advises that the activity from C21NI has been suspended and might not resume. The main reason is the abuse of the QSL route by many visiting foreign operators, the majority of whom never left a photocopy of their logbook behind as stipulated on their licence permits. This caused a big problem for the secretary of the club station, who is desperately trying to sort out the multitude of thousands of cards which arrived and are still arriving at the island.
- \* The Nauruan Government will change the telecommunication laws in 1992, and will consider the proposal that visiting amateurs should be issued with a licence starting with the C20 prefix, and the licence will be valid only during their stay on the island. The licence fee for visitors will reflect a more modern and realistic approach in money terms.
- \* Dodi HA6NF advised that 90 percent of the direct QSL cards received by HA6KNB for the ZA1HA operation were posted before the end of December.
- \* Bill Vogel, formerly VK6NVW, advises

that he has acquired a full call: VK5IE. Bill is the contact person for the "CQ" Awards in Australia. Bill's new call sign will not be in the callbooks for a while. Please use his address as shown in the old callbooks (1979-1992) under his old call sign of VK5NVW.

## QSLs Received

Note: W=week; M=month; Y=year; FM=from; MGR=manager and its call;

OP=operator and/or its call.

Bureau cards received: SV1AEU/5 (2Y FM OP), AP2HA (2Y FM OP), ZC4ESB (1Y 11M FM OP), A41JV (2Y FM OP), VP5B (10M FM OP), JT1BH (9Y FM OP), PJ8T (1Y11M FM MGR K4PI), FO4NS (8M FM OP FDIPLR), HC2HVE (5M FM OP), OF4JK (4Y FM OP).

Direct cards received: ZA1A (4W FM MGR NCDXF), V63JH (7W FM OP), ZA1HA (14DAYS FM OP:HA6NF), V12RC (3DAYS FM OP VK2DEJ).

## Thank You

Thank you to all my helpers, especially to: VK2DID, VK2KFU, VK2SG, VK4CY, VK4DA, VK4OH, VK5QW, VK5WO, VK6NE, VK8KV, VK9NS, HA6NF, HS0ZAP, T30JH, VE8PV, ZL2VS, and the following publications: *QRZ DX*, *The DX Bulletin* and *The DX News Sheet*.

Good DX and 73

ar

## EDUCATION NOTES

BRENDA EDMONDS VK3KT - PO Box 445 BLACKBURN 3130.

Since I did not manage to have any Education Notes in the January issue (sorry, but a holiday trip intervened) I will now wish all readers all the best for 1992, and look forward to hearing of many more successful candidates at both the initial and the upgrading attempts.

At this time of the year I expect many clubs and groups are planning or starting courses to help new recruits enter the hobby. I have been interested to hear from the WIA Exam Service that most of the applicants for accreditation as examiners are coming as nominations from radio clubs or societies. This is a very pleasing indication of the strength and dedication of the clubs.

However, it does not give any indication of the clubs which are providing classes or other

assistance to prepare students for the examinations.

I would like to appeal once again to all those who are arranging any sort of class, course, discussion group, personal tutoring or other assistance to inform their respective Divisions of this fact. Give the Division either the full information of what is arranged, or at least a contact name and address for some member who is prepared to explain what is available.

At the Federal level, all those who enquire about the Amateur Service or the WIA receive a letter and leaflet which give basic information and then direct the enquirer to the appropriate Division. It is most important that the Divisions should be able to follow up by providing information about the location of clubs

and the availability of assistance to those who have no contacts of their own.

I have often thought it would also be useful for each Division to have records of members who would be prepared to "sponsor" new recruits by allowing them to visit the shack, talk about amateur radio and ask questions as they try to learn. It would be especially helpful to potential amateurs in areas without local active clubs, or beyond the reach of organised classes. As in most aspects of amateur radio, the urban operators have better access to facilities provided by the Divisions and clubs.

There are many possible candidates, in both remote areas and more populous regions, whose interest is being damped by the inability to get information and help when they are needed. In many cases the help is there, but that is not much use if the candidates cannot find out about it. Please publicise what you have to offer.

73 Brenda

ar

## SPOTLIGHT ON SWLING

ROBIN L HARWOOD VK7RH - 52 CONNAUGHT CRES, WEST LAUNCESTON 7250

Events in Europe and the former Soviet Union continue to dominate on shortwave. We are already in the second month, and the continuing inter-communal conflict in the Balkan regions shows no signs of letting up. I believe that monitors in central Europe have been able to follow developments on HF and VHF. At this stage, it is hard to predict what is going to happen, but clearly radio will be involved.

As well, the USSR ceased to exist on 31 December 1991. It was replaced by the Commonwealth of Independent States, a loose confederation of sovereign republics. The largest of these is Russia, then Kazakhstan and Ukraine follow in size. It is anticipated that each former Soviet republic will quickly develop its own external radio service. The future of Radio Moscow is still uncertain, as I write this in early January. The Russian Republic will probably absorb this operation, and senders which formerly carried this station, but happen to be located in other republics, could carry different programming in future. I believe also that Cuba has ceased to relay Radio Moscow programming to North

America, although Radio Havana programs are still being broadcast via European sites on HF.

Since the formation of the CIS, private and independent broadcasters have dramatically increased, especially in Russia and the Ukraine. Some are even leasing former Soviet HF senders, yet many are simply hiring air time from the existing domestic networks.

Deutsche Welle in Cologne, Germany, commenced broadcasting via relays in Siberia, late last year. Signals have been good here. The Japanese service is heard on 7380 at 1100 to 1150 UTC. As well, the German service is on 7340 between 1000 and 1400 UTC. Beijing also utilises European sites to relay its programs. I expect these will con-

tinue, although the co-operative arrangements were made with Soviet authorities.

However, I expect that Russian sites will be mainly employed. Other republics, such as the Ukraine and the Central Asian republics could be sensitive about relaying foreign broadcasters.

I also expect that we could have a lot of new prefixes on amateur radio during the next 12 months. If the six republics making up Yugoslavia become independent nations, there will be six new countries on the DXCC. The former Soviet republics did count as separate DXCC listings, but they presumably will want to remove signs of the former Soviet call sign structure. Also I have noticed that Japan has seemingly exhausted its J suffixes and has commenced using alphanumeric call signs from its ITU allocations.

Well, that is all for this month. Until next time, the very best of listening and 73.

ar

**Help stamp out stolen equipment - always include the serial number of your equipment in your Hamad**

# POUNDING BRASS

GILBERT GRIFFITH VK3CQ - 7 CHURCH ST BRIGHT 3741

If you think Morse Code is just something nasty that has been imposed upon amateurs by some mysterious "them" in order to make the acquisition of a call sign more difficult, you are probably missing out on more than half the fun that can be gained from his hobby. Morse may be commercially obsolete at present, but simple economics will ensure that the code remains a useful means of communication. This aside from the fact that the code is probably still the most reliable form of long-distance communication, makes the knowledge of the code and its use so important for amateurs. It is common knowledge amongst Morsiacs that it takes more skill to operate CW than SSB (for example). This means, unfortunately, that it is more difficult to get started than yacking into a microphone, or typing into a computer. Still, "mastering the art is 10 times easier than learning to talk, and you did that when you were two years old" (ARRL Handbook).

Let's assume you have been taking notice of the past two month's articles and have had time to practise, and now it can be said you know the code. As everyone who has ever sat an exam will know, this is not really enough "knowledge" to make passing the examina-

tions easy. So, what needs to be done before you are sure you can pass?

Remember, the exam is nothing like what is experienced 'on-air', but is still run as if one were applying for a position as a PMG telegraphist. This means that being able to copy other amateurs' conversations is not necessarily good enough. In my opinion, unless you are going for the new United Kingdom Novice test (which uses typical QSO lingo), you need to be able to copy plain English language, without interference or noise, at 12wpm with no errors, if you want to pass 10wpm with ease. You don't need a lot of experience of operating on-air. Some people with very bad nerves will need a bit more leeway, but 15wpm should be the maximum you let yourself become accustomed to, or you will find the test is too slow and you may make simple mistakes about the ends of words. I am sure the best way to achieve this is by using a computer, followed by cassette tapes, and finally WIA Slow Morse broadcasts. All that is really required is motivation and practice. If you have a problem with motivating yourself, consider the efforts of those who have gone before; people with no interest in amateur radio have, in wartime, learned the code in

days, thanks to another motivating force, and I'm sure this would apply to many people reading this column.

Possibly this is why many people are becoming attracted to QRP (low power) and home-brewing, because once we know what is possible with (say) one watt CWDX, it is a strong motivation or challenge to achieve the goal oneself, and there are many who enjoy building a rig from the meanest junk box available, and who can hope to realise a goal of 100 countries using that rig. I know that, prior to my becoming involved in amateur radio, I would have thought such a feat impossible, but now I know I could do it too, if I put in the required effort. This means you could too!

I wonder if it could be done without using Morse code?

I wonder what the absolute minimum cost would be?

I wonder in how short a time could one do it?

Following receipt of a suggestion by the U-QRP Club (USSR), the G-QRP Club has received unanimous support from major QRP clubs around the world for adoption of the new operating signal, "72", meaning "wishing you good QRP", to be used in contacts between low power stations. (MM #21).

72 GIL VK3CQ  
ar

# REPEATER LINK

WILL MCGHIE VK6UU @ VK6BBS - 21 WATERLOO CRS, LESMURDIE 6076

## Linking Interface

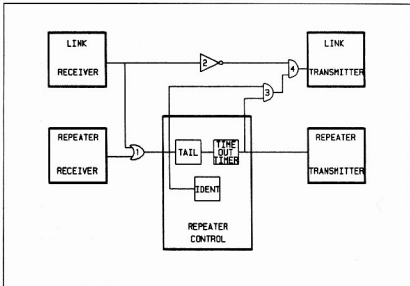
There may be a few repeater clubs out there contemplating how to link their repeater to another repeater. Perhaps there have already been discussions on how to link your repeater to another. A few of you may have discovered it is not as easy as was perhaps first thought.

This month's Repeater Link contains a simple block diagram of the basic logic that may be of interest to you. It is all hardware based, as I have no experience on micro-control of repeaters.

What I set out to do was take an existing repeater and find the simplest way to interface it with a simplex link. All repeaters that are hardware based have a similarity about them. There is a receiver connected to a control board that connects to a transmitter. These are the lower three boxes in the diagram: repeater receiver, repeater control and repeater transmitter. What is shown in this diagram is the switching logic only — no audio paths are shown.

The mute control located in the repeater receiver activates the control board logic; that sets in operation the carrier tail and the time-

out timers. The output of the control board then turns the repeater transmitter on and off.



The logic symbols as shown 1 to 4 have all been added with the main intention of minimising the amount of change to the existing repeater. The way the repeater now operates is as follows:

All logic levels are such that high is operate and low is non-operate. For example, when the mute is open (signal received) the output

from the mute is high.

OR Gate 1 commons the link and repeater mute outputs so that either receiver activates the control board. There is no interaction between the mutes, the OR gate takes care of that. The output of the OR gate feeds the tail and time-out timers. As can be seen, the repeater control board does double duty now as the time-out (and, by the way, the CWident as well) timer is used for the repeater and the link. The logic feed to the link transmitter is via gates 3 and 4. AND gate 3 requires the mute of either receiver to be open and the time-out timer not to have timed out. This is the normal operation when an incoming signal is received. Note that one of the inputs to AND gate 3 is before the tail-timer. This means there will be no carrier tail on the link transmitter, a desirable situation for smother operation (you do not hear two mute tails in series when linked).

AND gate 4 prevents the link transmitter transmitting when the link receiver mute opens. This would happen because the control board does not know which mute is open, and a logic signal is sent to the link transmitter to turn on. This in turn turns the link receiver off, and the whole link system toggles back and forth.

Inverter 2 (to maintain our high logic on) and the AND gate 2 prevent the link toggling back and forth. The link mute must be low (no incoming link signal) to feed a high via inverter 2 to AND gate 4 for the link transmitter to turn on.

This logic diagram is the concept only, and would have to be adapted to suit your repeater. However, this design has been built and is running under test at the moment. What it does show is that minimal changes to the existing repeater are required. The repeater's control board does all the timing. The

final design also uses the repeater ident control to place identification on the link transmitter as well.

A future article in Repeater Link will present the audio side of things. This also uses the audio processing in the repeater to minimise the extra circuitry in the link transceiver.

A total of seven connections between the repeater and the link are used in the final design. Features like CTCSS encode on the repeater are fed to the link. No extra CTCSS encoder is needed. The DTMF decoder in the repeater is also shared by the link system, so that DTMF control over the linked system can be achieved via the link or the repeater.

The overall design is too complex to present in all its detail, but a few of the design concepts may help. You may be able to improve and adapt these ideas.

If you have any ideas on linking logic that you would like to share, send them to me. ar

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## INTRUDER WATCH

GORDON LOVEDAY VK4KAL - AVIEMORE, RUBYVALE 4702

Date	Time Z	Freq	ID	Mode	Traffic & Comments
221091	1105+	7002.5	V	A1A	Beacon (16)
dly	0850+	7008.5	MNR	F1B	Moscow Nav R/250Hz 3rd cypher (21)
121191	1015	7009	—	2xF1B	Net F7B, also 7012, 250Hz shift
221091	mni	7011.5	—	F1B	250Hz shift (4)
0211Dly	mni	7048.9	UHF3	F7B	Also F1CW, 5 fig blocks (16)
Dly	mni	7065	—	Mxd	A2, F1B, F1CW, R7B, msw in 5 fig blocks
131191	0956+	14010	—	J3E/U	B/C Male voices, Indonesian
do	1013	14007	—	J3E/U	Same as above (3)
261191	0945	14035	—	J3E/U	B/C stn M&F Indonesian language (3)
111191	0912	14037	—	A3E	B/C with male voices
Dly	mni	14046+	—	Mxd	Rad teleph + NON + F1B
This frequency varies from 14044.2 to 14046.84					
Dly	mni	14058	—	AC3	Also heard on 14033/4 (37)
291191	1036	14058	—	NON	Timing pulse — 84 per min (10)
151191	0946	14067.3	—	AC3	Fax & carrier pulse/backwave
081191	0935	14068	VBT	A1A	Wk VPO, 5ltr code
Dly	mni	14070	VRQ	A1A	+ VPO, V8X, Viet text (17)
Dly	mni	14075	VRQ	A1A	Also on 14095, 14100 & 14203 (50)
Dly	mni	14095	VFC	A1A	+RG777, NBC, all Viet news agency (27)
081191	1130+	14123.8	—	RBPP	A1A
081191	0940	14126	—	F1B	Cig RES3, UOJ51, RCJC
301091	0525	14140	ULY4	A1A	1000Hz shift (17)
031191	0920+	14177	UJD80	F1A	Fed naval stn Alexandrovsk (7)
Dly	1000+	14210+	PTA	A1A	UZ244 de UJD80 ZBR K (7)
041191	1100	14214	VVH	F1B	VRQ clone 14215, 14225 also (28)
221091	mni	14217.5	UMS	F1B	500Hz shift (4)
Dly	0932+	14250	—	NON	Also 14211.5 250Hz (49)
051191	1205	18075	—	A3E	Steady carrier only (10)
1211+	1130+	18080	Rad Moscow	A3E	Commercial B/C stn, no other info
041191	1033	18118	BOG	A1A	B/C stn ID at 1300Hz (8)
Dly	mni	21031.5	MNR/ums	Mxd	CO de BOG, repeat many times
281091	0640	21031.5	UMS	F1B	Tic to UMS 250Hz (31)
01 1191	1320/50	21080	UMS	J3E	Urgent typhoon active near Manila
Not clear where this transmx originated, not stated if hrd, maybe once only, check.					
241191	0446	21242	—	F3	Com Hotel net/3 stns/Inf supply list
291091+	0400+	21250	—	R7B	TV B/C V wide signal
Dly	mni	21283.5	UMS (MNR)	Mxd	4krtz wide
Dly	0500/10	21322	PTA	A1A	Tic to UUMS, typhoon warning, F1B (33)
mni	21347.5	UMS (MNR)	Mxd	A1A	VRQ clone, may P stns active (27)
281091	0920+	21355.5	MNR	F1B	F1B 250HzAC3 10pmn Wk/Nav (8)

Many "hit and run" stations on 21342.5, 21344.5, 21348.5 (all USSR with 51D) mixed modes used. Also a "numbers" station again heard on 21350 on 231091 at 1135Z A3E. Female, flawless English, each number group repeated twice; uses this frequency often.

My thanks this month to VKs 2PS, 4BG, 4AKX, 4BJL, 4BTW, 4BXC, 4CAS, 4EKA, 5TL, 6RO and VK6XW.

Many nuisance stations are being noted on 28-29MHz, but insufficient info is being given. Mostly PON stations, commercial broadcasters, but no information to make a positive ID. Keep with them.

ar

# KNUTSHELL KNOWLEDGE

GRAHAM THORNTON VK3IY

*A brief overview of what other magazines have to say. The information given below has been supplied to the WIA free of charge by Thornton Publishing. Your divisional library may have copies of the references quoted.*

## Amplifiers

### Linear RF

**A Simple 10-Meter Sideband Amplifier.** Bruce Auld NZ5G, 73 issue #374 Nov 1991 pp 52, 54, 56. il cets, cmp, diags and pcb. A circuit is given which provides 10W PEP output for 1.25W drive. The power device is a single 2SC1969 transistor.

### Power

**RF Power Amplifiers and the Conjugate Match.** Warren Bruene W5OLY, QST vol LXXV No 11 Nov 1991 pp 31-32. il cets and graphs. A report on a quite elaborate experiment is given. Tests on three correctly adjusted output stages shows that the resistance looking back into the transmitter is not equal to the load resistance seen by the transmission line.

## Antennas

### Mechanical

**Strengthening the Cushcraft 40-2CD.** Dave Leeson W6QHS, QST vol LXXV No 11 Nov 1991 pp 36-42. il diags and photo. The resistance to wind and ice load is increased by insertion of tubing into the elements to improve the section modulus. Strengthening modifications to the boom are also described.

### Miscellaneous

**'My Feedline Tunes My Antenna'** Byron Goodman W1DX, QST vol LXXV No 11 Nov 1991 pp 33-35. il diags. An elementary dissertation is given on the true meaning of characteristic impedance of a transmission line and its SWR. Tuned transmission lines are distinguished from non-resonant lines used with resonant antennas.

### Multiband

**The Heli-Hat Antenna.** J Frank Brumbaugh KB4ZGC, 73 issue #374 Nov 1991 pp 32, 35. A 15 turn helix, 18" high, is capped by a circular disk 18" in diameter. A series variable capacitor combines with an adjustable tap on the helix to form an L network tuner. The antenna described is usable from 10 to 17m. A single quarter wave radial is required for each band.

**Challenger DX-VI.** Peter Hart G3SJK, RadCom vol 67 No 12 Dec 1991 pp 51-53. il diags and photos. An evaluation is given of this GAP Antenna Products' multiband vertical antenna: performance is compared to a Butternut HF6V-X vertical antenna.

**The Solarcon A-99 Antenna.** Bill Clarke

WA4BLC, 73 issue #374 Nov 1991 p 36. il diag. A review is given of this commercial vertical antenna, which works on 10 to 17m.

## Audio

**Voice ID on a Chip.** Bill Brown WB8ELK, 73 issue #374 Nov 1991 pp 11-12. 61. il cct, cmp and pcb. A device is presented which allows two voice messages to be recorded and replayed at will. 8 seconds are provided for each message. The circuit is based on ISD1016 analogue storage IC. The electrically erasable storage is non-volatile.

## Computers

### Accessories

**Computer Interface.** Greg Smith, EA vol 53 No 11 Nov 1991 p 72. il cct. An I/O data device which uses the computer parallel port to communicate.

### Miscellaneous

**Computer Remote Control of an Amateur Station.** Larry Amodeo W2AX and Jack L Schultz W2GGE, QST vol LXXV No 11 Nov 1991 pp 25-30. il cets and photos. Block diagrams are given to describe the remote operation of an amateur station in Vermont from New York via the telephone network. A Kenwood TS-940S, a linear amplifier and an antenna rotator are all remotely controlled, with indicating information displayed at the controlling end. A PC is required at each end, together with ancillary equipment such as modems.

**Using Your PC to Control Radio Gear (2).** Tom Moffat VK7TM, EA vol 53 No 12 Dec 1991 pp 94-99, 109. il cct and photos. A hardware interface unit is supplied to connect Icom transceivers to any computer with an RS232 port. Software listings are given in 'C' to permit control and readout of frequency.

An appropriate software disk (Aust\$25) and a kit for the interface (Aust\$35) is available from High-Tech Tasmania, 39 Pillinger Drive, Ferntree Tasmania 7054 Australia.

### Software

**Textloader for Technical Software Morse Tutor.** James Hossack GM3DKW, RadCom vol 67 No 12 Dec 1991 p 54. A program, written in Basic, is provided to enable any text to be added to this commercial tutor.

## Electronic Devices

### Automotive

**Car Vandalism Detector.** Bob Parker, EA vol 53 No 12 Dec 1991 p 83. il cct. A sharply filtered microphone amplifier is used as a detector of fast rise-time high frequency sounds, typical of those produced by coins scraping on paintwork, and other acts of vandalism.

**Digital Tacho.** Jeff Monegal, EA vol 53 No 12 Dec 1991 pp 72-77. il cets, cmps and photos. The distributor points are used as the source of RPM information. The signal frequency is multiplied to give a satisfactory gating period; provision is made to cater for four, six and eight cylinder engines. A digital read-out displays from 0 to 9990 RPM. A kit is offered for construction of the device.

**Turbo Timer.** N C Albrechtsen, EA vol 53 No 12 Dec 1991 p 82. A 555 timer is arranged to maintain a diesel engine at idling speed for a preset time after the ignition switch is opened. This allows the engine to cool.

## Temperature Control

**Temperature Controller.** R W Phelps, EA vol 53 No 12 Dec 1991 p 83. il cct. A small mass whose temperature is to be controlled is thermally connected to a 2N3055 transistor. The base emitter voltage of this transistor is used as the temperature sensing element, and is compared to a preset voltage. An error signal switches collector current on or off in the sensing transistor, heating or cooling the controlled mass. It is claimed that 50°C can be maintained to within  $\pm 0.2^\circ\text{C}$  by this method.

### Timers

**Experimenting with Electronics. Delay Switch.** Peter Murtagh, EA vol 53 No 12 Dec 1991 pp 69-70, 101. il cct, cmps, pcb and photos. A simple two transistor circuit actuates a relay for a preset time period, initiated by pressing a push-on switch. Delay is adjustable from 4 to 200 seconds with circuit provided, but can be extended four fold by component substitution.

## Propagation

**Propagation Broadcasts and Forecasts Demystified.** Russ Healy NJ2L, QST vol LXXV No 11 Nov 1991 pp 20-24. il graph. An account is given of the meaning and significance of propagation data broadcast by WWV and WWVH. The relevance of solar flux, sunspot number, K index, and A index to amateur band propagation is discussed.

## Power Supplies

**Nicad Charger.** Bernie... ZS1BW, RadZS vol 45 No 10 October 1991 p 10. il cct and graph. Charging from a relatively high voltage via a series resistor gives a substantially constant charging current. A nomograph is supplied to calculate the value of resistance for a given charging voltage for each cell voltage. The information is extracted from Elektor July/Aug 1978.

**Secrets of Simple DC-DC Converters - 2.** Andrew Pierson, EA vol 53 No 12 Dec 1991 pp 134-137. il cets and graphs. In this part, design procedure is given for blocking oscillators, with emphasis on efficiency and regulation. The construction of suitable transformers is also considered.

## Receivers

**SSB Receiver for the 80m Amateur Band (2).** Leon Williams VK2DOB, EA vol 53 No 12 Dec 1991 pp 84 - 88. il cmp, diag, pcb and photos. The construction details are given in this part, together with the testing and alignment procedure. Directions are given for making a case from sheet aluminium.

## Technology

**Basic Steps Toward Tracing and Eliminating Power-Line Interference.** Max Prescott K3QM, QST vol LXXV No 11 Nov 1991 pp 43 - 46. il cets and graphs. A general discussion is given on the causes and consequences of corona discharge and spark gap noise in power lines. Techniques are described for identifying noise sources within the home, and along power lines.

## Test Equipment

**Sweep Oscillator.** Peter Buckman, EA vol 53 No 12 Dec 1991 p 82. il cct. An audio sweep generator is described. Used with a CRO, it displays frequency response directly. A CRO triggering output is provided.

**Using an Oscilloscope as a General Purpose Tester.** Mike Dawson G3TCL, RadCom vol 67 No 11 Nov 1991 p 52. il cct, cmp and diag. A simple attachment for an oscilloscope is described. A 6V 50 Hz signal is applied to the device under test. A signal

proportional to the applied voltage is fed to the X amplifier, and a voltage proportional to load current to the Y amplifier. A variety of Lissajous type patterns is obtained, depending on the circuitry between the test probes. Semiconductor junctions give characteristic figures, depending on their nature. Capacitors, inductors and resistors can be distinguished, and an estimate made of their value.

**Model 3500 Frequency Counter.** (Product Review) Larry R Antonuk WB9RRT, 73 Issue #373 Nov 1991 pp 30 - 31. il photo. A review is given of this counter which is made by Startek International Inc. The frequency range is 10Hz to 3.5GHz.

**Portable Frequency Counters.** Gordon West WB6NOA, 73 issue #374 Nov 1991 pp 15 - 16. A review is given of the applications of small hand-held frequency counters. A list of manufacturers is supplied.

**First Steps in Home Construction (8).** John Case GW4HWR, RadCom vol 67 No 12 Dec 1991 pp 32 - 34. il cets, cmp, diag and photo. A timer is described which is used in parallel with a PTT switch for mobile operation. The timer sounds after two minutes of transmission time, as a precaution against 'timing out' a repeater.

## Transceivers

**Yaesu FT-990 160 - 10 Meter Transceiver.** (Product Review) James W ('Rus')

Healy NJ2L, QST vol LXXV No 11 Nov 1991 pp 47 - 50. il graphs and photo. A review is given of this equipment comparing laboratory measurements to specifications. A contrast is made with some of the features of the FT-1000.

## Transmitters

**CW Transmitter for the 3.5MHz Novice Band.** Steve Price G4BWE, RadCom vol 67 No 12 Dec 1991 pp 46 - 48. il cets and photo. A 1W CW transmitter is described, with a choice of up to four switch-selectable crystals. A sidetone generator is included in the design.

## Glossary of Abbreviations

il The article contains illustrations, a list of which follows.

cct	A circuit diagram
cmp	A component layout drawing
EA	Electronics Australia
diag	A mechanical drawing
pcb	A master drawing from which printed circuits may be produced
QSTVE	QST Canada
RadCom	Radio Communication
RadZS	Radio ZS
73	73 Amateur Radio Today

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## DIVISIONAL NOTES

### VK2 NOTES

TIM MILLS VK2ZTM

May I, on behalf of the council and office bearers of the VK2 Division, wish all members a happy new year.

A new year brings a rash of Divisional activity leading up to the AGM which will be held on Saturday 2 May 1992. The closing date for Council nominations and agenda items will be 2pm on Wednesday 18 March 1992 at the registered office. The new Divisional year commenced on 1 January.

Nineteen-ninety-two is a special year for New South Wales, being both the 150th anniversary of Sydney being elevated to the status of a city, and Local Government being established. To mark the year-long celebrations, a special callsign has been made available - VI150SYD. It will be available for use by clubs, groups or individuals upon application to the Divisional office by writing to: Special Callsign, PO Box 1066, Parramatta NSW 2124. QSL requests should also be sent to this address. Include a self-addressed stamped envelope for a direct reply. The VK2W1 broadcast will keep you informed.

A couple of years ago, changes were made to the Annual Conference of Clubs meet-

ings, replacing them with regional meetings. Matters and agenda items processed by these meetings were submitted to a State conference held at Parramatta on 7 December 1991. The minutes will find their way back to the clubs in the regions. During the early part of this year, regional meetings will need to be held with new matters being raised. The next State regional delegates' meeting with Divisional Council is scheduled for 3 May.

The Central Coast ARC Field Day will be held at the Gosford Showground on Sunday 23 February. The Gladesville ARC is hopeful of four test transmissions this year. The tentative date for the first is 26 February. The first Trash and Treasure will be at Parramatta, Sunday afternoon 2 February. The balance of these events for 1992 will be held on the last Sunday of the odd-numbered months. February is likely to be the next time the rejuvenated Sydney fox hunts are conducted. While it may be a while since fox hunts were held in Sydney, they have been regular features in the country, like the Urunga Convention over the Easter weekend, the Oxley Region in June or at intervals at Orange.

## New Members

A warm welcome is extended to the following who joined the Division towards the end of last year.

M R Cheesman	Assoc	Kensington
A J Clancy	VK2GPN	Split Junction
S Cobcroft	Assoc	Bangalow
P N Duff	VK2JOE	Toukley
A J Farrow	VK2TJF	Castle Hill
M Frazier	VK2XWS	Manly Vale
R H Gandevia	VK2VNV	Randwick
P E Garbutt	VK2GAI	Lapstone
F Leaver	VK2SU	Yenda
A Montanari	VK2GMM	Maroubra
R W Parks	VK2GRP	Karuah
L Polack	VK2NM	Lynnhurst
A Roberts	VK2GPO	Ultimate
D M Symons	Assoc	Turnut
N W Turner	Assoc	Narooma
L T White	VK2GNJ	Narromine

February is also the starting date for the next classes being held at Parramatta on Monday nights. Contact the office at Parramatta via the methods shown in the page AR directory.

## Divisional Exams

The NSW Division has scheduled four exams for this year. The first will be held at Parramatta on Sunday afternoon 1 March. The closing date for applications is 13 February. All enquiries to the VK2 office by one of the methods shown in the directory of page 3 of AR. The other dates for 1992 are set down for 24 May, 30 August and 8 November.

## Diary

The office needs an update on club and group details at regular intervals. Keep us informed on meetings, classes, exams and field events, as well as office bearers, so your



club can be assisted whenever enquiries are received.

## QSL Bureau

A reminder that you must register with the Bureau your requirements re handling of any cards for your callsign/s received at the Bureau. The data bank was completely re-programmed last year, with most amateurs providing input. A few appear to have missed providing these details, judging by the comments that "I have not been getting any cards from the Bureau" on-air or to the office. Even if you don't want to collect cards, please advise, so the storage does not get jammed again. Check with your local club if it receives a bulk clearance of cards from the Bureau. Otherwise you should contact the Divisional office to register. No enquiries to the Bureau, other than sending in cards for outward despatch.

## VK3 NOTES

JIM LINTON VK3PC

## Threats to Repeater Network

The Victorian Government's push for microeconomic reform, its policy of full cost recovery, and privatisation of infrastructure are all threats to the repeater network.

The WIA Victoria Council has been monitoring developments in government policy for the past 18 months to see if they will have an effect on the hobby of amateur radio.

Since voice repeaters were first permitted in Victoria they have been placed on select mountain tops to provide a very good coverage. This was achieved only due to WIA Victoria being recognised by government bodies and agencies as a responsible and worthwhile organisation. We have also received excellent inside help from a few of our members employed by particular government bodies and agencies. WIA Victoria has developed a high degree of mutual understanding and co-operation with a number of the government bodies. They have been willing hosts to WIA Victoria repeaters on their communication sites — and on some installations they shared the use of our equipment. But the long-established arrangements which have made this possible are now in doubt.

## Some Repeaters May Have to Close

Two policies initiated recently by the financially strapped Victorian Government are of grave concern. The first is its direction to government agencies, like the Department of Conservation and Environment, for them to raise revenue. This could mean WIA Victoria being asked to pay thousands of dollars rent a year for mountain-top sites.

Already a bill of \$1500 has been received — and the WIA Victoria Council will do its best

to seek a review of the decision to charge us such a high rent. We simply cannot afford such amounts which, if applied to various repeater sites, could send us broke.

The WIA Victoria Council is carefully considering its options and may have to abandon some of the lesser used repeater sites. This is a reluctant step obviously — but may have to be taken during this year.

## Privatisation Threat to Repeaters

We thought the cost recovery policy imposed by the Victorian Government was the worst possible threat to the repeater network. But even worse is the real prospect of the Victorian Government selling all of the communications networks operated by government bodies and agencies.

The Ministry for Finance has targeted for privatisation the more than 30 separate radio-communication networks. These include those run by emergency services, public transport, Education Department, Sheriff's Office, VicRoads, power, gas and water utilities, Department of Conservation and Environment — to name a few. The privatisation of these networks seems certain to affect the WIA Victoria repeater network which shares sites with them.

The government called for expressions of interests in November from private companies to take over all of its radio networks. The government is looking for the private sector to buy up all of the equipment including 15,000 mobile radios, remote sites and towers. It has received about 20 expressions of interest. The government intends to call tenders soon and hopes to have the privatisation of the networks in place by the middle of the year. Privatisation is certain to see extensive rationalisation of the current 30 networks over a number of years into a single integrated network using the digital technology.

The Finance Ministry is still evaluating the huge savings it expects to make by turning over the on-going operation of the networks to a single private communications company. The Ministry is also considering the loss of jobs in the public service sector and the industrial relations implications of its plan.

The WIA Victoria Council is very concerned about the future of amateur repeater installations on those government sites once they are privatised.

It isn't very pleasant to announce that someone has become a Silent Key, but it is even worse to discover that the person you have been talking about is actually alive and well. I will only say that I thought I had heard the news from a very reliable source and, of course, having been away for a couple of months, assumed it must have happened while I was away. Anyway, I am pleased to tell you that Gordon Goldsmith VK5HM (Hotel Mote) as he has always been known) is not a Silent Key, although he has been quite ill for a couple of months. Gordon is currently residing at the Sunny Dale Rest Home, 247 Military Rd, Semaphore. If you would like to visit Gordon, it is suggested that you first ring the home on 49 4744. I am sure he would like to hear from some of his old friends.

## WIA Exams

The next WIA Exam will be held on Saturday 29 February 1992. The closing date for application will be Sunday 14 February. For more information ring the Examinations Officer, Don McDonald VK5ADD, on 276 1251.

## RTTY Gateway

I understand VK5RSV is now a RTTY Gateway carrying both RTTY and packet. This meant that RTTY users can now get on to packet (clever people down there at South Coast ARC). If you would like more information contact Grant VK5ZWI or Andrew VK5EX.

It's that time again! What time? Why, the time when Council looks for nominees for the 1992 Council Election. If you feel you have something to contribute to the running of the organisation, please let a member of Council know now.

## Diary Dates

Tuesday 23 February, General Meeting, 7.45pm, Burley Griffin Building, 34 West Thebarton Rd, Thebarton.

## VK6 NOTES

HARRY ATKINSON VK6WZ

### Deadline — Esperance WA

Preparing these notes has been a hassle this month — strange location, strange typewriter, and all office files and telephone hundreds of kilometres distant. It also differs from those heady days of the '50s and '60s when divisional notes sometimes ran to a whole page, and sometimes included the odd "feud" across state borders. In my case, I banded friendly insults with VK5PS (the late Warwick Parsons) across the VK5/VK6 border. It was never my good fortune to meet "Pansy" but we corresponded occasionally and swapped cards at Christmas time. If we were with us now he'd no doubt tell us all that BBS meant "best broadcasting station", which was

## 5/8 wave

JENNIFER WARRINGTON VK5ANW

Isn't it always the way? You do the work and somebody else gets the credit! Well, perhaps it wasn't credit, but if you have any complaints about last month's column, direct them to me; Rowland was not to blame despite the fact that his name appeared instead of mine! (Apologies Jenny — Ed).

his description of his place of employment — a certain South Australian commercial station.

It was announced in December that WICEN's application to the state government for a grant of \$3000 for equipment had been turned down.

Next month's notes will list the award winners in VK6 for 1991. 73 to all VK6WZ

## VK7 NOTES

TED BEARD VK7EB

All members please note: The Annual General Meeting of the VK7 Division shall be held at the registered office of the Institute, 105 New Town Road on 28 March 1992, commencing at 2pm.

All Notices of Motion for the AGM must be received by the Secretary not less than 28 days prior to the meeting, and must be signed by at least three (3) members.

Nomination of Candidates for election to Council must be received by the Secretary, in writing, not less than 21 days before the AGM.

Not less than 10 days before the AGM, should an election be necessary, a ballot paper shall be posted to each member of the division, and is to be returned to the Secretary prior to the commencement of the AGM.

Proxies are to be deposited at the registered office of the Institute, 105 New Town Road, Hobart, at least 24 hours before the time appointed for the meeting.

All the above items are in accordance with the Articles of Association.

E A BEARD VK7EB  
VK7 DIVISIONAL SECRETARY

## Murphy's Corner

Corrections — Simple Regenerative VLF-LF Receiver — *Amateur Radio* January 1992  
Circuit diagram page 8

Please note that the inputs 5(+ and 6(-) to voltage follower stage N1B are shown incorrectly connected and should be transposed.

Survival Radio, AR Dec '91. Please note that the decoupling resistor for ZN414, shown as 220k, should have been 220 ohms.

The parts list for Drew Diamond's three-band multiplier CW transmitter in December 1991, page 13, has errors in the resistor values. All resistors between, but not including, R2 (1kohm) and R8 (100k pot) have been incorrectly listed as ohms, but should be kilohms (kohm). Values, ranging from 1.5k to 220k, are shown correctly on the circuit diagram. Also Q, is listed as a 2N2222, but should be 2N2222.

## CLUB CORNER

The Gosford Field Day is a long-running and popular annual event on the amateur radio calendar. The next field day will be held at the Gosford Showground on Sunday 23 February 1992, commencing at 8am. This will be the 35th year of the event.

As usual, the well known suppliers of electronic equipment, components and books will be attending the event. These companies will have their latest products on display and for sale, and many of these companies will have items at special field-day prices.

The organiser, the Central Coast Amateur Radio Club, has kept the format of the day in line with the changing face of amateur radio. In recent years, seminars on a wide range of topical and interesting lectures and equipment displays have been arranged. Some attractions, however, have remained unchanged and ever-popular; among these is the sale of the many thousands of new and used surplus equipment items known as disposals, with many bargains going up for grabs.

Last year, a popular flea market was arranged for those who wanted to sell their surplus equipment, from trestles, the trailers, or from the boots of their cars. The organisers expect the flea market will boom this coming field day, with even more vendors than last year.

### Other Gosford Field Day attractions include:

ALARA stand  
WIA Historian stand  
QSL Bureau  
WIA Educational Service stand  
WICEN display  
Amateur television displays  
Packet radio displays  
Ladies' stall  
Complimentary bus tour of the central coast  
Free tickets to the nearby reptile park  
Free shuttle bus from Gosford railway station.

More than 1400 people have attended each of the past few Gosford field days; this one will be bigger than ever, so don't miss it. Mark 23 February 1992 down for the Gosford field day, and start gathering those items you want to sell at disposals or the flea market.

### 1992 Gosford Field Day Preview

Amateur radio operators, their families, friends and those interested in amateur radio are invited to attend the 1992 Gosford Field Day which will be held on Sunday 23 February 1992 at the Gosford Showground. Gates open at 8am in wet or fine weather. All displays are under cover.

Registration: Adults — \$6.00. Pensioners — \$3.00. Children (under 12) — free

A special group concession will also be available on application.

### Proposed Program Sunday 23 February 1992

0800 to 1300 Registration  
0800 to 1700 Tea and coffee available in dining room  
0800 Flea market open  
0930 Disposals booking-in closes (Dwyer Pavilion)  
1000 Disposals open (entry southern end of Dwyer Pavilion)  
1200 Bus tour departs  
1200 Various seminars commence  
1330 Drawing of raffle. Check at "information" for winners.

A field day information service will be provided on the Gosford 2m repeater (6725) on Saturday afternoon and Sunday morning using the callign VK2AFY/P.

**Trains:** Sydney and Newcastle trains will be met by a courtesy bus which will run between Gosford railway station and the Showground between 8am and 10.30am. Return transport may be arranged at the information booth.

**Parking:** Plenty of off-street parking is available at the Showground.

**Accommodation:** Accommodation is usually scarce on the central coast at field day time, and early booking is advised.

**Catering:** Tea, coffee and biscuits available free of charge in the dining room from 8am to 3pm. Take-away food can also be purchased in the Showground.

**Calls Present:** Bring your QSL cards for the "calls present" boards.

**Disposals:** Disposals forms and lot numbers may be obtained at the Showground on Saturday afternoon 22 February 1992. Items for disposals may be booked in on Saturday 22 February between 2pm and 4pm, or on Sunday 23 February before 9.30am. Please note that 9.30am is the cut-off time for disposals booking-in, and late arrivals may be refused. Improperly tagged or catalogued items will be refused.

**Flea Market:** For those who wish to bypass disposals and sell their own equipment, trestles will be available in the flea market.

Information on group concessions, trade displays, flea markets, disposals, programs or any other field day information can be obtained by writing to:

The Field Day Committee  
Central Coast Amateur Radio Club Inc  
PO Box 252,  
GOSFORD NSW 2250  
Bob Fitzgerald VK2XRF  
Gosford Field Day Committee Secretary

### Stolen Equipment

Stolen from L J van de Pavert VK3CLV: 1 Kenwood TS440S HF transceiver, serial number RT06039;  
1 Kenwood TM201B VHF transceiver, serial number 7011611E;  
1 Kenwood PS430 power supply;  
1 Kenwood SP40 external speaker;  
1 Kenwood SP50 external speaker.

## OVER TO YOU

ALL LETTERS FROM MEMBERS WILL BE CONSIDERED FOR PUBLICATION BUT MUST BE LESS THAN 300 WORDS. THE WIA ACCEPTS NO RESPONSIBILITY FOR OPINIONS EXPRESSED BY CORRESPONDENTS.

### Amateurs in History

Historians at the Geelong and Warrnambool campuses of Deakin University are putting together a biographical dictionary of the Western District of Victoria as a major new historical project. This dictionary of Geelong and Western District people from all walks of life will be the basis of a substantial history of the region and a valuable resource for future historians.

Amateur radio operators have played a significant part in not only communications and emergency services, but also in the whole range of social and cultural activities since Marconi et al let us, a wide social spectrum, loose on the unsuspecting radio spectrum. We want to invite amateurs with links to Geelong and the Western District of Victoria to take part in the project by nominating "silent keys", amateur or not, you feel have contributed to the region in any significant way.

There are always some people who stand out in memory. This is as true of amateurs as of any group of people. But we don't want to miss the unsung people who have contributed

to the making of the community. As amateurs distributed through the community we are particularly well placed to make our contribution to the community's memory bank. I suppose it is a pity we have to have a silent-key-only limit, but our turn will come.

We will be pleased to give more information on the project and send nomination forms to any amateurs who would like to communicate with either:

Ros Lewis (052) 47 1592 or  
Ann Chandler (052) 47 1695  
Centre for Australian Studies  
Faculty of Humanities  
Deakin University  
Geelong 3217  
Ros Lewis VK3NJU/YMR

### Monopole or Unipole?

The old saying that "a rose by any other names smells the same" certainly applies to my "unipole" antenna described in October AR. Peter VK4KIP took me to task in December '91 AR re the naming of this antenna—he claims it should have been a "monopole"!!

After I read Peter's comments, my initial reaction was "so, what's the big deal?"—would Peter with his academic purism rename the popular "Slim Jim" antenna a "Thin James"? At this stage, I decided to consult my trusty Oxford dictionary. Here I found that a two-wheel cycle is known as a "bicycle", and a one-wheel machine can be a "monocycle" or a "unicycle"—either name applies. I concluded, therefore, that my antenna can be known as a "monopole" or a "unipole".

So, Peter, if the term "unipole" offends your Latin/Greek derivation, I suggest you buy some "white-out" and correct the article in your edition of AR—I will not be offended by the change!

Des Greenham VK3CO  
16 Clydesdale Cr  
Mooroopna 3629

### Spaced Out?

In reference to Gilbert's article under "Pounding Brass" (AR Jan 1992), please note that a word space is seven dits, not five as stated. Refer to any handbook for confirmation. With a poor "fist" and/or poor reception, five dits could be indistinguishable from a letter space of three dits.

David Horsfall VK2KFU  
PO Box 257  
Wahroonga 2076 ar

## SILENT KEYS

DUE TO INCREASING SPACE DEMANDS OBITUARIES MUST BE NO LONGER THAN 200 WORDS.

### We regret to announce the recent passing of:

Dr W J Hart	VK2YQ
Mr Jimmy Jones	VK2AUX
Mr F H Browne	VK3DKO
Mr R A Gorman	VK3YIB
Mr Kelvin Lee	VK3ZSO
Mr Peter Boddington	VK4BMP
Mr W A Wallace	VK4KHZ
Mr M J Brunger	VK5OS
Mr R K Knott	VK5AFB
Mr Harold Pain	VK6ABH
Mr G E Brown	VK6BBZ

### Peter Boddington VK4BMP

It is with deep regret that we record the passing of Peter on 25 October 1991, aged 61 years. He is survived by his brother David and sister Mary Ruth Cooper, both residing in the Sydney area.

Peter held a First Class Commercial Ticket and, after eight years in commercial broadcasting, accepted a position in the radiation and electronics laboratory of the Ranger Uranium Mine. Peter left in 1968 to take up the position of Base Administrator with the Royal Flying Doctor Service at Mount Isa until he retired in 1981. In the 12 years with

RFDS, Peter became greatly respected by the people of the north-west Outback.

In his retirement, Peter took up a small property 25km from Mount Isa, known as the Melaleuca, where he built with his own hands a very fine homestead designed with special attention to coping with the harsh climate. The complete complex was powered by solar energy, and the power for amateur activities also came from this source.

Peter passed away on his beloved Melaleuca, with his special friend of long standing, Mary Elizabeth, at his bedside on Saturday evening 26 October 1991. He was buried there on the property in the presence of many friends.

At the Flying Doctor base in Mount Isa, a melaleuca tree has been planted as a memorial to a fine man.

Noel Lynch VK4BNL  
Basel Pinton VK5BK  
John Martin VK4MX

### Jimmy Jones VK2AUX

With sadness, I report the sudden death of our friend Jimmy Jones VK2AUX. Jim died Tuesday 17 December 1991 at the age of 37 years.

He was a member of the Blue Mountains Amateur Radio Club Inc since 1977 and par-

ticipated in many club activities and served as the club QSL manager since joining the club. Jim has been a member of the WIA for several years and attended many AGMs and assisted the QSL bureaux on behalf of the Blue Mountains club. Jim's other major activity was Scouting, which he combined with his hobby of radio. He enjoyed showing Scouts the way of amateur radio during many hours of JOTA activities.

He first obtained his novice licence VK2PBU, and when he operated the local Blue Mountains weekly 80m net he was known as VK2 Pretty Blue Undies. Jim upgraded his call to a combined licence VK2JB, and it was only six weeks ago he passed his Morse exams and realised his ambition of an unrestricted licence. Jim had reserved the callsign VK2AUX with DoTC for about a year. He had the pleasure of using his new callsign up to the day he died.

Jim will be sadly missed by his parents and many friends throughout the Blue Mountains and radio world.

Terry Ryeland VK2UX.

### Charles Frederick Peddell VK2XO

Chas Peddell passed away on 3 May 1990 in his 84th year, after a period of ill health.

After service in the RAN as a Leading Telegraphist, he joined DCA as an Aeradio Operator on 1 April 1940. His first posting was to Cloncurry during the hectic war years, when accommodation was scarce and primi-

tive. Jack Faulkner VK2AZP recalls Chas and his wife living in less than ideal conditions, made habitable by Charlie's ingenuity.

Next transfer was to Kempsey. During the devastating floods of the early 1950s, Chas was highly commended by civil authorities for maintaining communications with the outside world, when all else failed. Ron O'Brien then Senior Technician, set up his 3BZ equipment using borrowed and acquired crystals and batteries. At Sydney, Brisbane, Coffs Harbour, Lord Howe Island and other units, he held various operating and supervisory positions. He was the last OIC of the Liverpool HF Direction Finding Station prior to its closure in 1954.

He was an outgoing, likable person who, on quiet night shifts, could hold an audience on any subject from religion to automobiles, and, of course, "ham" radio. At times he proudly displayed an injured finger gained whilst assisting Francis Chichester lift his aircraft from the water at Jervis Bay.

After retirement in 1971, he continued to enjoy his radio until failing hearing made it too difficult.

**D Reynolds VK2ANW**

## John Rooks VK2BDD

John passed away on 18 December 1990 after a lifetime devoted to the advancement of radio communications.

The year 1920 saw a 16½-year-old John

join the RN at Plymouth, and commence training as a telegraphist using crystal receivers and spark transmitters. Whilst serving in the Mediterranean, he was chosen to serve aboard the Admiral's yacht HMS *Bryony*, and became involved in ionospheric studies in conjunction with radio pioneer, Marconi. Communication testing and monitoring became a feature of his duties as the RN re-equipped with valve-type equipment.

In 1928, John volunteered for an exchange posting with the RAN, arriving here in HMAS *Canberra* on her delivery voyage. On completion of his service he was discharged and joined the then-DCA in 1934. He commissioned the Department's first station at Holbrook, and later became involved in the acceptance, installation and maintenance of transmitters, receivers and DF equipment.

In 1950 he was engaged in the semi-automation of the Sydney Centre. After transferring to Townsville in 1956 as supervisor, he remained there until retirement on 10 July 1969, when he returned to Sydney. He was a sensitive, caring person who remained a "ham" throughout, but in recent years only monitored the bands.

The writer last saw John at the Aeradio 50th anniversary luncheon, where he enjoyed himself immensely and re-lived some of his past achievements.

**D Reynolds VK2ANW**

## Max Brunger VK5OS

Max passed away on 6 November 1991, aged 65 years, after contracting leukemia.

Max was a good family man and member of his church community, and was a conscientious employee of Carr Fasteners for 46 years, having recently retired from his senior position in manufacturing quality control. He served in the RAAF during WW2. Max had been an amateur radio operator for 35 years and greatly enjoyed his hobby. He also enjoyed sailing Heron class yachts, often in company with his family.

VK5OS was initially active on 7MHz in the days of AM and valves, and became known as "Old Socks" because of his callsign. He built most of his own gear and earned fame for his 807 driver into a 7C5 power amp valve transmitter — which really worked well.

Max was organiser of the CW Operators QRP Club and had been a foundation member (No 2) when it was formed in 1983. The cheery and helpful voice of Max controlling the CW Ops 3.5MHz SSB net on Friday evenings will long be remembered.

Max was a gentleman in the full meaning of the term and will be sadly missed. Deepest sympathy is extended to his wife Roma and family.

**Don Callow VK5AIL**

**ar**

## A Call to all Holders of a Novice Licence

Now you have joined the ranks of amateur radio, why not extend your activities?

The Wireless Institute of Australia (N.S.W. Division) conducts a Bridging Correspondence Course for the AOCIP and LAOCIP Examinations.

Throughout the Course, your papers are checked and commented upon to lead you to a successful conclusion.

For further details write to:

The Course Supervisor  
WIA  
PO Box 1066  
Parramatta NSW 2124  
(109 Wigram Street, Parramatta)  
Phone: (02) 689 2417

11am to 2pm Monday to Friday  
7 to 9pm Wednesday

## Morseword No 59

*Solution Page 56*

	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

### Across:

- 1 Nude
- 2 Expectorated
- 3 Scene
- 4 Tick over
- 5 Drink noisily
- 6 365 days
- 7 Sink or —
- 8 Scoff
- 9 Whiff
- 10 Prolonged attack

### Down:

- 1 Soft cheese
- 2 Keep back
- 3 Conceited
- 4 Diet
- 5 Enjoy
- 6 Hot lollies
- 7 Road
- 8 Sketched
- 9 Shell
- 10 Fruit

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# HF PREDICTIONS

ROGER HARRISON VK2ZTB, THE APOGEE GROUP

I must first offer my apologies for the non-appearance of the predictions since September last year. We moved home and business on the 1st of September, just on deadline for the October issue.

The computer system I was then using to run the Graph-DX software suffered a breakdown (probably unrelated to the move), then I spent the next eight weeks mostly away from home, travelling interstate (on business) and overseas (for the Institute); it was an incredibly busy period. Work commitments have taken up my time since, plus a substantive overhaul of our computer systems has meant volunteer "work" has necessarily taken a "back seat".

But, that's now behind me, and the predictions return. So, for those just encountering the charts for the first time, and for those who've forgotten in the mean time, read on to find out what they can do for you and how you can use them.

## The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for the

five bands from 14 to 28

MHz. The UTC hour is the first column, the second column lists the predicted MUF (maximum usable frequency), the third column the signal strength in dB relative to 1  $\mu$ V (dBu) at the MUF. The fourth column lists the "frequency of optimum travel" (FOT), or the optimum working frequency, as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1  $\mu$ V in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point 'standard' where S9 is 50  $\mu$ V at the receiver's input and the S-meter scale is 6dB/S-point.

$\mu$ V in 50 Ohms S-points	dB( $\mu$ V)
50.00	S9 34
25.00	S8 28
12.50	S7 22
6.25	S6 16
3.12	S5 10
1.56	S4 4
0.78	S3 -2
0.39	S2 -8
0.2	S1 -14

The tables are generated by the Graph-DX program, assuming 100 W transmit power output, modest beam antennas (e.g. three-element

Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

**VK EAST.** The major part of NSW and Queensland.

**VK SOUTH.** Southern-NSW, VK3, VK5 and VK7.

**VK WEST.** The south-west of West Australia.

Likewise, the overseas terminals cover substantial regions; e.g.

"Europe" covers most of western Europe and the UK.

Graph-DX is written in the C language and runs on any IBM PC.

AT/XT or compatible computer with EGA, Hercules or VGA adapter and screen. Professional and Amateur versions are available.

Enquires to FT Promotions, PO Box 306, Woollahra NSW 2025.

ar

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 13.3	-10	10.1	0	1	-4	-15	-29	
2 12.6	-10	9.6	-4	-2	-6	-16	-30	
3 19.4	-4	17.6	-10	-1	-5	-14	-28	
4 23.3	3	18.0	-20	-3	2	3	0	
5 20.7	5	23.2	-29	-6	2	6	6	
6 22.1	7	24.1	-33	-7	2	7	8	
7 21.4	7	24.7	-31	-6	2	7	8	
8 20.3	8	24.7	-26	-3	4	8	8	
9 22.0	9	24.1	-15	2	8	10	10	
10 22.5	11	22.2	4	13	10	11	10	
11 26.0	14	20.8	9	16	17	15	11	
12 24.5	17	19.6	20	23	21	17	10	
13 23.8	20	18.9	30	28	25	18	11	
14 23.1	23	18.3	37	32	27	19	10	
15 22.2	24	18.0	39	33	26	18	8	
16 21.0	25	16.1	39	32	25	15	7	
17 19.9	26	15.4	39	31	23	12	1	
18 18.5	27	14.3	38	28	20	8	-4	
19 17.3	28	13.3	36	26	16	4	-10	
20 17.6	28	13.0	36	26	17	5	-9	
21 20.3	25	15.9	37	30	23	13	2	
22 18.2	21	14.1	36	21	15	5	-6	
23 17.2	16	12.7	17	15	10	0	-13	
24 15.9	9	12.0	8	8	3	-4	-18	

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 13.8	3	10.6	4	3	-3	-15	-29	
2 12.8	-6	9.9	-2	-1	-6	-17	-31	
3 14.9	-1	13.5	-8	0	-5	-13	-28	
4 24.4	4	18.9	-19	-1	3	4	1	
5 29.0	6	23.8	-28	-5	2	6	6	
6 28.7	5	23.5	-31	-7	1	5	5	
7 28.5	5	23.1	-31	-9	1	5	5	
8 28.0	5	22.8	-29	-6	2	5	5	
9 27.2	6	22.0	-23	-3	4	6	5	
10 25.9	8	20.9	-12	1	5	10	6	
11 24.1	10	19.4	-1	9	11	9	5	
12 22.3	13	17.9	11	16	14	10	3	
13 20.5	16	16.3	23	21	17	9	0	
14 19.4	23	15.4	32	25	18	8	-4	
15 18.4	24	14.5	34	25	16	5	-8	
16 17.5	26	13.8	34	24	15	1	-13	
17 16.9	27	13.1	34	23	13	-1	-17	
18 16.1	27	12.5	33	21	10	-5	-21	
19 15.4	28	11.8	31	19	7	-9	-27	
20 15.0	28	11.4	31	17	5	-11	-30	
21 15.9	26	11.9	31	20	9	-6	-23	
22 18.3	22	13.6	30	23	15	4	-8	
23 17.5	18	14.7	24	21	15	4	-5	
24 16.9	13	12.8	14	12	6	-3	-16	

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 12.5	10	9.4	9	0	-12	-30	...	
2 11.7	0	9.0	2	-4	-14	-31	...	
3 15.2	1	11.3	0	2	-2	-12	-28	
4 21.9	5	17.0	-7	4	5	3	-3	
5 20.3	6	21.3	-15	1	6	8	6	
6 20.6	7	22.3	-20	-1	5	8	7	
7 20.2	8	22.9	-22	2	4	7	7	
8 20.1	6	22.6	-21	-1	5	7	6	
9 27.6	7	22.5	-19	0	6	8	6	
10 26.4	8	21.7	-12	3	6	8	6	
11 25.4	9	21.1	-3	8	11	10	6	
12 24.0	13	19.4	10	16	15	12	6	
13 22.5	17	18.1	23	22	19	12	1	
14 21.0	21	16.8	33	27	25	12	1	
15 20.3	23	16.1	35	28	26	10	-1	
16 19.6	24	15.5	36	28	19	8	-4	
17 18.6	25	15.3	36	27	18	4	-7	
18 17.9	26	14.0	36	25	15	2	-12	
19 17.1	26	13.2	34	22	12	-1	-17	
20 16.0	27	12.7	33	20	8	-4	-21	
21 15.2	27	11.6	31	17	5	-12	-31	
22 15.7	27	11.9	32	19	7	-9	-27	
23 15.9	23	13.2	32	21	11	-3	-18	
24 15.2	19	11.5	21	11	1	-15	-32	

## VK EAST - MEDITERRANEAN

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 12.6	-6	9.4	-2	0	-4	-14	-27	
2 12.6	-7	9.3	1	0	-5	-15	-28	
3 11.1	1	9.6	4	1	-5	-17	-32	
4 11.9	5	9.2	7	1	-8	-22	...	
5 10.9	6	8.5	8	-1	-13	-30	...	
6 11.1	15	8.7	11	0	-13	-33	...	
7 13.2	22	10.5	20	9	-3	-19	-36	
8 17.3	23	11.8	28	21	12	0	-13	
9 18.6	21	14.5	25	22	17	9	-8	
10 18.0	14	13.6	12	14	1	4	-4	
11 18.0	7	14.9	0	6	6	2	5	
12 17.8	0	14.1	0	3	2	-1	-3	
13 16.9	-6	13.6	-16	-3	-1	-3	-9	
14 16.7	-10	12.6	-19	-5	-2	-4	-9	
15 14.4	-15	14.1	-21	-7	-3	-6	-11	
16 14.7	-19	11.2	-21	-7	-4	-6	-11	
17 14.3	-20	10.7	-21	-7	-4	-6	-11	
18 17.1	-17	11.2	-22	-7	-4	-6	-11	
19 17.4	-10	13.7	-25	-8	-3	-3	-7	
20 20.4	4	15.8	-27	-9	-3	-2	-4	
21 17.7	-6	12.6	-20	-5	-2	-3	-8	
22 15.3	8	11.7	-13	-2	-2	-6	-13	
23 13.9	-9	10.5	-8	-1	-3	-9	-18	
24 12.9	-9	9.8	-4	-1	-4	-12	-23	

## VK STH - MEDITERRANEAN

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 12.1	-8	9.2	-2	-1	-7	-17	-31	
2 12.0	-4	9.2	0	-1	-8	-20	-35	
3 12.0	0	9.2	3	0	-9	-22	-39	
4 11.4	4	8.8	5	-2	-12	-29	...	
5 14.2	7	8.7	7	-3	-11	-30	...	
6 10.6	13	8.4	8	-5	-20	...	...	
7 12.4	20	9.8	16	3	-10	-30	...	
8 17.7	23	12.7	26	16	5	-25	...	
9 19.2	20	14.5	29	23	16	4	-5	
10 17.9	19	13.2	22	18	12	3	-7	
11 15.9	12	12.2	11	5	-2	-15	-28	
12 14.6	6	11.5	3	4	-3	-15	-30	
13 15.6	-2	11.0	-5	1	0	-6	-14	
14 15.0	-9	10.4	-12	-2	-2	-6	-14	
15 14.7	-12	9.7	-14	-3	-3	-7	-14	
16 13.7	-19	9.6	-16	-5	-3	-7	-14	
17 13.5	-21	9.5	-17	-5	-4	-7	-14	
18 14.7	-18	10.2	-14	-3	-4	-6	-12	
19 16.3	-13	11.3	-24	-8	-4	-5	-9	
20 19.2	-7	13.8	-28	-4	-3	-6	-10	
21 21.1	-6	12.9	-21	-6	-3	-5	-9	
22 14.4	-13	11.2	-14	-4	-3	-7	-15	
23 13.2	-14	10.1	-9	-2	-4	-10	-20	
24 12.8	-13	9.4	-5	-2	-5	-14	-26	

## VK WEST - MEDITERRANEAN

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 11.7	-20	9.0	-8	-4	-8	-16	-27	
2 11.7	-17	9.0	-8	-4	-8	-18	-31	
3 11.6	-12	9.0	-4	-4	-10	-20	-34	
4 11.0	-10	8.6	-2	-5	-12	-25	...	
5 10.7	-8	8.6	0	-7	-17	-33	...	
6 10.3	-3	8.1	1	-7	-10	-36	...	
7 11.9	4	9.4	6	-2	-12	-29	...	
8 14.9	11	11.2	12	4	-7	-1	-13	
9 16.8	16	12.8	18	8	1	4	-7	
10 20.3	16	15.3	20	18	14	7	-1	
11 16.6	12	12.8	13	11	6	-3	-14	
12 16.6	6	12.0	4	5	1	-4	-17	
13 17.4	1	11.9	-5	1	1	-4	-17	
14 16.3	-6	11.1	-15	-3	-3	-6	-13	
15 15.1	-16	10.3	-20	-6	-6	-9	-14	
16 14.0	-17	10.1	-20	-8	-6	-9	-14	
17 14.0	-21	9.6	-20	-8	-6	-9	-14	
18 13.5	-26	9.4	-20	-8	-6	-9	-14	
19 13.3	-27	9.2	-20	-8	-6	-9	-14	
20 14.2	-22	9.8	-22	-8	-6	-9	-14	
21 15.9	-15	10.9	-22	-9	-6	-8	-13	
22 15.9	-20	10.8	-18	-7	-5	-9	-16	
23 17.2	-23	9.8	-15	-6	-7	-12	-21	
24 11.9	-23	9.2	-11	-5	-7	-14	-24	

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5	UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5	UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 15.7	6	11.0	5	6	1	-7	-19		1 16.8	12	11.5	11	10	5	-4	-16		1 15.5	17	11.6	19	13	5	-8	-28.5	
2 17.2	6	13.1	0	6	5	-1	-9		2 17.9	11	13.5	8	11	8	1	-7		2 17.2	15	13.1	15	14	9	0	-11	
3 17.0	6	12.4	-5	6	5	-2	-10		3 18.1	9	15.5	1	9	9	1	-7		3 17.9	14	14.8	8	13	10	1	-1	
4 19.5	2	14.7	-12	0	3	1	-4		4 19.2	9	17.5	-5	6	9	7	3		4 19.4	11	18.0	1	11	17	10	-6	
5 24.2	4	17.0	-18	-1	3	3	1		5 25.5	6	18.2	-11	3	7	7	4		5 26.8	8	19.8	-5	8	11	10	6	
6 24.7	4	17.0	-20	7	3	3	1		6 24.8	6	18.2	-11	3	7	7	4		6 26.8	8	19.8	-5	8	11	10	6	
7 25.0	4	17.5	-20	-2	3	4	1		7 25.6	6	18.3	-14	1	5	6	3		7 26.5	7	21.7	-10	4	8	8	5	
8 25.0	4	17.5	-18	-1	4	4	2		8 25.5	6	18.1	-13	1	6	6	3		8 26.4	7	21.5	-10	4	8	8	5	
9 27.8	6	17.4	-12	3	6	3	1		9 25.2	6	17.9	-10	3	7	7	4		9 25.9	7	21.7	-10	4	8	8	5	
10 22.3	7	17.4	-5	5	7	5	0		10 24.2	8	17.1	-4	6	9	7	3		10 25.2	8	20.5	-5	7	9	8	4	
11 20.6	8	16.5	0	8	8	3	-3		11 22.7	9	16.0	1	9	10	6	1		11 24.0	9	19.8	1	10	11	8	3	
12 18.9	9	15.1	7	10	8	1	-7		12 20.8	10	14.4	7	11	12	7	-2		12 22.4	11	18.0	8	13	15	10	-1	
13 17.8	13	14.1	13	13	8	0	-10		13 19.1	12	13.4	12	13	10	2	-7		13 20.7	14	16.6	16	17	14	7	-2	
14 16.9	17	13.3	19	15	8	-2	-15		14 17.6	16	12.3	19	15	9	-1	-13		14 19.0	18	15.2	23	19	13	4	-7	
15 16.1	22	13.6	25	17	11	-4	-19		15 16.7	21	11.4	25	17	8	-9	-11		15 17.9	22	14.8	27	18	28	19	-17	
16 15.4	25	12.0	30	18	7	-7	-24		16 16.7	21	10.7	28	17	8	-9	-11		16 17.0	25	13.4	31	22	12	1	-17	
17 14.7	27	11.3	28	16	5	-11	-29		17 14.9	26	10.3	28	16	4	-12	-31		17 16.2	26	13.1	32	20	10	-5	-22	
18 14.1	27	10.7	28	16	5	-11	-29		18 17.4	20	9.8	27	13	0	-18	-38		18 15.5	28	12.1	32	19	7	-8	-26	
19 13.7	30	10.3	28	16	4	0	-30		19 13.7	29	9.6	27	12	-20	-41	-43		19 14.9	30	11.5	31	27	12	-10	-19	
20 14.5	29	9	29	16	3	-14	-33		20 13.6	29	9.6	27	12	-2	-21	-41		20 14.2	30	10.9	30	15	2	-14	-37	
21 13.7	25	9.4	24	11	-1	-1	-33		21 14.5	27	10.1	28	15	3	-14	-33		21 13.9	30	10.5	29	14	0	-19	-41	
22 13.2	19	9.1	17	7	-3	-20	-39		22 14.1	25	9.8	25	12	-16	-35	-37		22 14.7	29	10.2	24	3	-13	-35		
23 13.0	13	9	12	5	-5	-20	-39		23 13.0	18	9.7	17	9	-2	-17	-35		23 15.2	27	11.6	30	18	7	-9	-26	
24 13.8	8	9.6	8	5	-2	-15	-30		24 14.8	14	10.4	14	9	-1	-12	-27		24 14.7	22	11.1	23	14	3	-11	-29	

## VK EAST - AFRICA VK STH - AFRICA VK WEST - AFRICA

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5	UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5	UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 31.8	13	25.0	4	16	19	19	17	1	1 26.6	10	20.8	0	11	13	12	7	1	1 29.9	14	23.8	9	18	20	19	15	
2 31.8	12	24.2	2	15	18	18	16	1	2 26.6	10	21.6	-2	10	12	12	8	1	2 30.2	13	24.4	5	16	19	18	15	
3 34.1	12	24.8	2	14	18	18	14	1	3 26.6	10	22.2	-3	9	12	12	8	1	3 30.9	13	23.5	3	15	18	18	15	
4 32.2	13	24.5	3	15	18	19	16	4	4 26.9	10	22.2	-2	10	12	12	8	1	4 30.9	13	23.4	2	15	18	18	15	
5 31.6	13	25.0	5	17	20	20	18	5	5 26.6	10	21.8	0	11	13	12	8	1	5 31.2	13	23.7	3	15	18	18	16	
6 33.2	15	25.8	10	20	23	22	20	6	6 26.3	11	21.6	3	13	15	13	8	1	6 31.8	13	24.2	4	17	20	20	17	
7 32.0	16	26.1	16	24	25	23	20	7	7 25.8	13	21.1	6	16	16	14	8	1	7 32.4	15	25.0	10	20	22	22	19	
8 30.8	17	25.7	26	29	29	25	21	8	8 24.9	14	20.2	7	17	18	15	9	1	8 31.7	16	24.6	14	23	25	23	20	
9 29.7	20	24.0	38	36	33	28	22	9	9 23.7	19	19.2	32	29	24	16	7	1	9 30.5	17	24.9	26	29	28	25	20	
10 28.3	21	22.8	41	37	33	27	20	10	10 22.2	21	17.9	36	30	23	14	3	1	10 29.3	20	24.4	42	36	34	29	22	
11 27.4	21	21.9	43	38	33	26	19	11	11 17.5	24	16.6	37	29	20	9	-1	1	11 28.0	21	22.6	44	37	34	29	22	
12 27.1	22	21.5	44	39	34	26	19	12	12 19.2	23	15.3	36	26	16	3	-11	1	12 26.6	22	21.3	45	39	35	26	17	
13 26.6	22	21.0	46	40	34	26	18	13	13 18.3	23	14.6	35	24	14	-1	-17	1	13 25.4	22	20.3	45	38	32	25	14	
14 25.7	23	20.6	46	39	33	25	18	14	14 17.4	24	13.8	35	12	11	-5	-22	1	14 24.9	23	19.8	45	38	31	22	13	
15 25.9	23	18.7	44	37	30	21	11	15	15 15.8	24	13.3	33	20	7	-9	-28	1	15 24.3	23	19.2	45	37	30	21	11	
16 22.4	24	17.4	43	35	27	17	5	16	16 16.1	25	12.6	31	17	4	-14	-35	1	16 23.4	23	19.0	44	36	29	19	8	
17 20.6	25	15.9	41	32	23	-1	-1	17	17 12.5	25	12.0	30	14	0	-20	-41	1	17 22.0	23	18.6	44	34	28	19	9	
18 18.7	25	14.4	38	27	17	3	-11	18	18 14.6	25	11.2	27	10	-6	-29	-31	1	18 20.7	24	16.1	41	31	22	10	-3	
19 17.0	25	13.7	36	24	12	-3	-20	19	19 14.0	26	10.7	25	6	-10	-34	-40	1	19 19.2	24	14.8	39	28	17	4	-11	
20 15.8	25	12.3	31	17	4	-15	-35	20	20 15.1	25	10.9	24	5	-11	-34	-40	1	20 17.7	25	13.6	36	23	14	-5	-23	
21 19.5	20	14.7	30	23	15	4	-9	21	21 16.9	20	12.6	27	17	6	-9	-27	1	21 15.9	25	12.3	31	16	1	-10	-41	
22 27.1	16	21.0	23	25	24	19	13	22	22 20.4	14	15.7	19	13	13	5	-5	1	22 19.3	22	15.0	34	25	16	2	-12	
23 30.7	15	24.4	14	22	22	18	10	23	23 23.8	18	18.4	18	15	15	10	15	1	23 25.0	18	18.4	23	16	3	-13	-35	
24 30.9	14	24.7	8	18	20	20	17	24	24 25.5	11	20.6	4	13	14	12	7	1	24 28.6	15	22.4	15	21	22	19	15	

## VK EAST - ASIA VK STH - ASIA VK WEST - ASIA

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5	UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5	UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 33.6	25	27.8	29	34	35	33	31		1 24.4	14	20.2	19	21	19	12	4		1 28.3	11	22.5	3	14	16	14	11	
2 34.1	25	28.1	30	35	35	34	31		2 24.5	14	20.8	19	22	19	13	5		2 28.9	11	23.4	3	13	16	15	11	
3 33.9	25	27.9	31	36	36	34	31		3 24.6	14	20.6	21	22	20	13	5		3 28.9	11	21.5	4	14	16	15	12	
4 34.5	26	27.5	32	37	37	35	32		4 24.7	14	20.3	21	22	20	13	5		4 28.4	12	21.4	4	15	17	16	12	
5 32.8	26	26.8	37	39	38	36	32		5 24.4	16	20.0	27	26	22	15	6		5 28.6	12	23.4	10	18	19	17	12	
6 31.4	28	25.6	42	42	40	37	32		6 24.0	18	19.4	34	30	24	16	6		6 28.4	14	23.2	16	22	21	18	14	
7 30.4	30	24.5	46	43	38	33	25		7 23.8	18	18.2	32	25	18	12	5		7 27.5	15	22.7	18	22	21	18	14	
8 28.5	31	23.0	51	47	43	37	31		8 21.2	23	16.8	41	32	23	11	-2		8 26.8	19	21.6	32	21	20	27	15	
9 26.8	32	21.5	52	47	42	36	29		9 19.7	25	15.2	39	28	18	4	-11		9 25.0	21	20.1	39	34	29	21	13	
10 25.2	32	20.1	52	46	41	34	26		10 17.3	27	13.7	37	28	14	-2	-23		10 23.2	22	18.6	41	34	28	19	9	
11 24.4	34	19.4	52	46	40	33	25		11 15.2	29	12.4	33	18	3	-16	-39		11 21.4	25	17.1	41	33	25	15	4	
12 23.6	35	18.6	51	45	39	32	23		12 14.5	29	11.5	30	13	-3	-25	-55		12 20.4	26	16.2	40	32	23	12	0	
13 22.8	35	17.5	50	44	37	30	20		13 13.2	30	10.8	29	12	-4	-27	-55		13 19.4	27	15.1	41	33	24	11	0	
14 21.2	36	16.5	50	43	36	27	17		14 12.8	31	10.1	24	4	-15	-40	-63		14 17.3	28	14.5	29	20	10	5	-13	
15 20.0	37	15.5	49	41	34	24	13		15 12.3	31	9.7	22	0	-20	-40	-63		15 16.8	28	13.9	37	26	16	2	-13	
16 18.1	38	14.5	40	33	23	20	8		16 11.8	32	9.2	20	0	-25	-40	-63		16 16.3	29	13.2	37	26	16	2	-13	
17 17.4	39	13.3	44	37	28	17	4		17 11.4	32	8.4	17	0	-25	-40	-63		17 16.1	30	12.4	35	23	11	-4	-21	
18 16.6	38	13.3	46	37	28	17	4		18 10.6	33	8.1	13	-13	-39	-40	-63		18 15.4	30	11.7	33	20	8	-8	-26	
19 20.4	35	15.3	41	37	31	23	13		19 11.3	36	8.6	4	-7	-28	-40	-63		19 14.9	25	11.3	23	26	16	5	-10	-28
20 20.4	35	15.3	41	37	31	23	13		20 10.4	37	8.1	0	-13	-39	-40	-63		20 14.1	25	11.1	23	26	16	5	-10	-28
21 29.2	27	22.6	34	37	35	32	28		21 17.1	16	13.1	19	14	5	-8	-24		21 18.3	15	14.4	16	16	15	10	1	-9
22 31.0	26	24.4	32	35	35	33	29		22 20.5	15	16.0	20	13	6	-7			22 22.1	13	16.7	11	16	14	9	1	
23 32.7	25	26.7	29	34	34	32	28		23 23.6	12	19.6	26	19	16	10			23 24.7	12	16.5	10	14	14	14	9	1
24 32.7	25	26.7	29	34	35	33	30		24 23.7	14	19.3	19	21	18	11	3		24 27.6	11	21.5	3	14	16	14	10	

# HAMADS

## TRADE ADS

● **WEATHER FAX** programs for IBM XT/ATs. RADFAX \$35, is a high resolution shortwave weatherfax, morse & RTTY receiving program. Needs CGA, SSBW radio & RADFAX decoder. Also RF-SHIELD, HFZGA, and R2VGA, same as RADFAX but suitable for Hercules, EGA and VGA cards respectively. SAT-FAX \$45, is a NOAA, Meteor and GMS weather satellite picture receiving program. Uses EGA or VGA mode. Needs EGA or VGA color monitor and card & WEATHER FAX PC card, & 137MHz receiver. All programs are on 5.25" or 3.5" disks (state which) + documentation, add \$3 postage. ONLY from M DeLathury, 42 Villiers St, New Farm Qld 4005. Ph (07) 358 2785.

● **BENCHER IAMBIC PADDLES** reduced to clear. \$170 for the chrome-plated model, limited stocks. Profoto Group, PO Box 501, Fyshwick ACT 2609. Phone (06) 280 4008, fax (06) 280 7250.

## FOR SALE — NSW

● **YAESU FT101E** transceiver, cooling fan, spare finals. KENWOOD AT1200 antenna tuner. \$600 net, no offers. Phil (02) 44 2703.

● **YAESU FL2100B** linear amp 1200W PEP input, spare tubes, GC, sell for best offer over \$800. YAESU FT7560 5m transmitter for FT101, 200, 500, 400 etc. Never used. \$150. VK2RIL (02) 971 9795.

● **YAESU FL2100** linear amp, \$600. Len VK2BNL (02) 484 2749.

● **ICOM IC-32AT HT** dual-band 2m/70cm, s/n 03353, incl wall charger, plus BP-7 450mAh spare battery, BP-4 battery case, CP-11 cigarette lighter cable, with orig packing, VGC, \$475. Edgar VK2RH (045) 87 7900 (BH), (045) 75 1945 (AH).

● **KENWOOD TS680S** HF txv, mint cond, manual, all access, sin 909325, 01 of no other use. Excellent rig, \$1500. All VK2UC QTHR (066) 21 5222 FM.

● **DECEASED ESTATE: YAESU FT101B** trans (c/w mike & earphones), \$400. T510 HP-500S rec, \$100. YAESU FC-700 antenna tuner, \$225. EDDYSTONE 770 F/Vt rec, \$50; DICK SMITH M9546 escort (10-20v, 0-2amp), \$30; 100Hz hom antenna, \$50; ESCORT digital ED168 multimeter, \$40; TECH TE15 GDO (transistorised), \$60; EA project audio OSC, \$20; DICK SMITH Q-1136 multimeter, \$30. 3a229 transmitting tube (with 2x ceramic sockets), \$40. Prices ONO. Chris (02) 484 8753. (Transmitting gear to licensed amateurs only).

● **1991 AMATEUR CALLBOOK**, International and North American listings, in GC, both volumes \$73 incl postage. Steve VK2PS (02) 654 1809.

● **KENWOOD TS-120V** HF txv, VGC, with MC-30 mike, MB-120 mobile mount, \$475 on sale. Phil VK2NPL (045) 87 7302 AH.

## FOR SALE — VIC

● **THUR HIGAIN** antenna, 3-element 10, 15, 20m with balun and connecting coax cable, \$250. 50ft two-section crank-up tower with rotator, \$750. All on site for removal. John not QTHR for VK3NF (03) 802 1849.

● **TONO 7000E** comms unit for RTTY CW ASCII instr and service manuals and cable, \$465 EC. (055) 23 1025.

● **YAESU** earphones YH-55 Impedance 8 ohms, as new cond, Roth VK3BG (03) 725 3550.

● **MFJ341D 1.7-30MHz** ATU 4:1 bal. Ant switch, EC, \$180. HL37V 2m 30w amp, Rx preamp, EC, \$150. TH860 mod 2000 Tandy computer, 10MB hard drive, 5.25 floppy, GC, \$150. Yaseu

YD148 desk mic, GC, \$50. Damian VK3EHP QTHR (053) 52 4183.

● **COMM RX REALISTIC DX200 1.5-30MHz**, \$150. Programmable Scanner, REALISTIC PRO2020, \$175 (dec'd estate), both with manuals & boxes. Recent amateur radio exam course of instruction. Two books & audio tape, \$17. VK3AFO QTHR (060) 24 2537.

● **FIVE-ELEMENT** linear loaded tribander by Warner Wulf, \$350. DA1WA and tuner, CNW518. Rated 2.5kW SIN EO8026, \$350. BH (052) 63 2423.

● **TRANPRO AUSTRALIA VALVE TESTER** type No 862, with sub board in lid with extra sockets. Instr manual, valve charts in GWO, \$100. Also TAYLOR VALVE TESTER, Windsor model 45C instr manual, valve charts, in GWO, \$120 plus freight. Bill VK3BWS QTHR (052) 29 3337.

● **POWER SUPPLY** 13.8V 30 Amps at 50%. Heavy duty, weights 10kg, English made, \$225. Ron VK3OM QTHR (059) 44 9019.

● **KENWOOD RS500** HF communications receiver 10kHz-30MHz, two filters incl VK8A-1 VK8SH still under warranty, \$1420. MONITOR SCOPE YO-100, in as new cond, \$310. Harry VK3AOJ QTHR (03) 802 5704.

● **The RAAF Williams Amateur Radio Club VK3APM** at the Laverton Base will be conducting classes for prospective radio amateurs and those who wish to upgrade their existing qualifications during 1992. The club is planning classes in the following sequence: ACP/NACP Morse code; pre-novice theory preparatory course; NAACP theory; and an ACP theory course. Enquiries to Mr Neil Toney (03) 369 1010.

● **MFJ 1278 TNC** Multimode with greyscale modem and 2400bps board. Incl Multimod IIware, \$55. Damien VK3CDI (054) 27 3042.

● **YAESU FT101E** mode to RF & PS boards, good finals, manual & oct notes, VGC, SIN 305177, \$400. YAESU FT101B (Mk II) complete RX/TX alignment, near-new finals, GC, with manual & n310005, \$350. Chris VK3JEG QTHR (03) 557 5180 home (03) 660 2977 bus.

● **MALDOL HS-260** Power SWR HF/VHF meter 12 watt and 120 watt ranges, \$50. HI-MOUNT HK-708 Morse key, \$20. Paul VK3EPD (059) 81 1771.

● **YAESU FT290R 2M** all mode base/portable cw leather carry case, nicads, original packing and manual, as new cond, \$490 on sale. David VK3QPM (03) 598 1015.

● **Yaseu FL2100 HF** Linear in new condition. Genuine VIBRO-LEAF jewelled movement bug key chrome plated, a collector's item. Offers on both of these considered. Don VK3ADI QTHR or BH (03) 882 0020.

## FOR SALE — QLD

● **REALISTIC AX190** ham band communication receiver SSB & AM, sep speaker, \$150. VK4ADS (07) 379 8245.

● **YAESU FT290R** s/n 2M20355. Nicads charger, soft carry case, \$450. WESTERN Peak Power meter, 50 to 150mHz, 520/200 watts, \$60. OSKAR BLOCK RF pow & SWR meter, 420-450mHz \$225/125 watts, \$30. MA5T TOP AMP VHF/UHF, \$35. Two BAW VIDEO CAMERAS, \$30 & \$35. GA1ENA flash/slow scan converter, all boards assembled, in case, requires leads between panel & boards, \$100. Norm VK4ZFO QTHR (077) 79 4841.

● **CLASS 1.5 (50uA)** MFJ 105L 100x75mm meters 3 scales, \$28. POWER TRANS 240volt-18v @ 25A continuous rating, \$25. (25a transformer for use with above, \$20). Boxer 100mm 240volt lat, \$15. ANDREW 44ASW 1m male connectors, \$22. 12v-220v relays, \$5 ea. VK4DY QTHR.

● **YAESU FT747** s/n 8G670357 YAESU FT757 ATU s/n 496001 has 16 months mth own guarantee, all with manuals. Phone Steve, on (072) 61 1711 from 6-7pm with your offers, please.

## FOR SALE — SA

● **Y113219 ENGLISH ELECTRIC** 4/125A new in cartons, \$45 ea. 4C x 5000, 4CX3500, 4CX x 1000, new with sockets, best offer. Also have the above as rebuilt tubes. SWAN ASTRO 150 s/n A150-668, with matching PS, in EC, \$600. VK5FR QTHR (082) 95 2331.

● **YAESU YO-101** monitor scope, \$250. AEA CP-1 CW/RTTY/AMTOR computer patch interface, full instructions and software for C64, \$250. TONG THETA-9000E ASCII CW RTTY computer, \$350. All in VGC. VK5XW QTHR (083) 331 7576.

## FOR SALE — WA

● **YAESU FT-101Z(D)** plus FTV250 and FTV-650B transvertors, \$750; KW2000A/US LDM-10; DICK SMITH 50mHz counter, \$80; LEADER DIPMETER LDM-85, \$80; PSUs 2x13.8v, \$40 ea. (09) 399 1808.

## WANTED — NSW

● **YAESU FTV-707 2m** transverter module for FTV-707 or FTV-107R. Dan VK2GG QTHR (043) 73 3616.

● **CIRCUIT OR DIAGRAM** for handheld YAESU FT202, all costs paid. Bruno VK2BPO QTHR (02) 713 1831.

● **JOB WANTED** in Sydney. Two-way radio or anything electronic. Ring Vic VK2VED (02) 772 2411.

● **ICOM R7000 or AR3000**, all mode RX or similar to 1.5ghz, any cond. Neville VK2QF QTHR (063) 73 8524, Hargraves, NSW 2850.

● **HF Tx/Rx** suitable for mobile or portable, with or without AC power supply. TS120S, IC730, FT301 or similar. Details to Roger VK2AIV QTHR (042) 34 1431.

## WANTED — VIC

● **COLLINS KWM2A T/S** or later model S line equip. Must be in EC, will pay top price. Rob VK3JE (060) 37 1262 OR (03) 584 5739.

● **TRANSFORMER 1000V, 300-400ma**. Also Electrolytic Capacitors 300-400 volt 200 µF. Damian VK3EHP QTHR (053) 52 4183.

## WANTED — QLD

● **KENWOOD** comms rcr OR666 CCT diagram and op manual. Photocopies OK, will pay costs. VK4DUP QTHR (078) 91 2419.

## WANTED — SA

● **IC225 2m** txv, not working, consider any cond. VK5BGZ Keith BH (08) 259 5363, AH (08) 280 7430.

## WANTED — WA

● **TS405S** TXCVR in original cond. Frank VK6ZR QTHR (09) 276 1357.

● **CIRCUIT DIAGRAM**, schematic or photocopy of, IC255A 2m radio, will reimburse any costs. Terry VK8NTJ QTHR.

# Kuwait National and Liberation Day Award

On 25 February every year the State of Kuwait used to celebrate its national day. From this year onward the event's name will be National and Liberation Day. To mark this auspicious event, Kuwait Amateur Radio Society is delighted to announce an international contest for Kuwait National and Liberation Day Award. The contest is open to both licensed radio amateurs and SWL, according to the following rules and regulations:

1. Contacts may be conducted on any

band and any mode from 3-30MHz.

2. The contest will start at 0000 GMT on 25 February every year and will end at 2400 GMT at the end of February.

3. There will be two callsigns in use: 9K2RA-NL and 9K2...NL.

4. To qualify for the award the contestant is required to secure at least three points by making two calls with KARS station (9K2RA-NL) and one call with any other Kuwaiti amateur station, the call letters of which are added to (9K2...NL) for instance:

9K2DR-NL.

5. The participant must submit a certified copy of the logbook along with five IRCs or \$US3.

6. There is no deadline for submitting applications, which should be addressed to: The Award Manager, Kuwait Amateur Radio Society, PO Box 5240 Safat 13053, Kuwait. Tel: 965 533 3762. Fax: 965 531 1188.

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## The "160" Have a Go (again) Activity

Due to multiple requests to "do it again", again, Hastings Branch 13 has set up the following event for your participation. Get a branch group together and borrow a tower or crane, or something at home (an 80m dipole works fine) and come up on 160m. International and national advertising is occurring, so once again good re-

sults for your effort are assured.

Previously we have "done it" in October '89 and June '91, so we have chosen March '92 this time to provide variation in time of year (season) and experience. Considerable ZL and VK support was forthcoming last time (without the pressure of a contest, just to "have a go", so join us this time for an exclusive expe-

rience.

— 1840 kHz +/-10kHz

— 2000 — 2400+ NZT

— 20 and 21 March 1992

— SSB and CW

73s ZL2BBI (branch callsign)

David Walker ZL3DK

ar

## Hamads

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

\*Eight lines per issue free to all WIA members, ninth line for name and address. Commercial rates apply for non-members. Please enclose a mailing label from this magazine with your Hamad.

\*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

\*Copy typed or in block letters to PO Box 300,

Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

\*QTHR means address is correct as set out in the WIA current Call Book.

\*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.

\*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

Conditions for commercial advertising are as follows: \$25.00 for four lines, plus \$2.25 per line (or part thereof) Minimum charge — \$25.00 pre-payable.

State: .....


Not for publication:

☐ Miscellaneous

☐ For Sale

☐ Wanted

Name: ..... Call Sign: ..... Address: .....



## Solution to Morseword No 59

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	1	2	3	4	5	6	7	8	9	10
1	—	•	•	•	•	•	•	•	•	•
2	•	•	•	•	•	•	•	•	•	•
3	•	•	•	•	•	•	•	•	•	•
4	•	•	•	•	•	•	•	•	•	•
5	•	•	•	•	•	•	•	•	•	•
6	•	•	•	•	•	•	•	•	•	•
7	•	•	•	•	•	•	•	•	•	•
8	•	•	•	•	•	•	•	•	•	•
9	•	•	•	•	•	•	•	•	•	•
10	•	•	•	•	•	•	•	•	•	•

Across: 1 bare; 2 spat; 3 view; 4 idle; 5 lap; 6 year; 7 swim; 8 sneer; 9 waft; 10 seige.

Down: 1 brie; 2 save; 3 vain; 4 fare; 5 like; 6 mints; 7 street; 8 drew; 9 pod; 10 pear

## HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary  
Wireless Institute of Australia  
PO Box 300  
Caulfield South, Vic 3162

I wish to obtain further information  
about the WIA.

Mr, Mrs, Miss, Ms:.....

.....

Call Sign (if applicable):.....

Address: .....

.....

.....

State and Postcode:.....

### TRADE PRACTICES ACT

It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that, the provisions of the Act are complied with strictly.

### VICTORIAN CONSUMER AFFAIRS ACT

All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the boxholder or seller of the goods.

TYPESETTING : Magazine Graphics  
PO Box 72  
Caulfield Sth, 3162  
Ph: 528 1033

PRINTING: Industrial Printing  
Richmond

MAIL DISTRIBUTION: R L Polk &  
Co Pty Ltd  
PO Box 140,  
Collingwood,  
Vic. 3066  
Tel:(03) 417 5161

The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

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## WIA Slow Morse Transmissions

VK2BWI nightly at 2000 local on 3550 kHz

VK2RCW Continuous on 3699kHz and 144.950MHz 5wpm, 8wpm, 12wpm

VK3RCW Continuous on 144.950MHz 5wpm, 10wpm

VK4WIT Monday at 0930 UTC on 3535kHz

VK4WCH Wednesday at 0930 UTC (0830 UTC daylight saving) on 3535kHz

VK4AV Thursday at 0930 UTC on 3535kHz

VK4WIS Sunday at 0930 UTC (0830 UTC daylight saving) on 3535kHz

VK5AWI Nightly at 1030 UTC on 3550 kHz

VK6RAP Nightly at 2000 local on 146.700MHz

VK6WIA Nightly (except Saturday) at 1200 UTC on 3.555MHz

# WIA Divisional Bookshops

The following items are available from your Division's Bookshop  
(see the WIA Division Directory on page 3 for the address of your Division)

	Ref	Price to Members		Ref	Price to Members
<b>ANTENNA BOOKS</b>					
Art. Compendium Vol 2 Software only	BX293	\$18.00	<b>MORSE CODE (Cont'd)</b>		
Antenna Compendium Vol 1 ARRL	BK163	\$19.80	Morse Code Tapes Set 1: 5-10 WPM - ARRL	BK331	\$16.70
Antenna Compendium Vol 2 & Software ARRL	BX294	\$32.40	Morse Code Tapes Set 2: 10-15 WPM - ARRL	BK332	\$16.70
Antenna Compendium Vol 2 ARRL	BX292	\$21.60	Morse Code Tapes Set 3: 15-22 WPM - ARRL	BK333	\$16.70
Antenna Handbook - 1988	BK217	\$23.00	Morse Code Tapes Set 4: 13-14 WPM - ARRL	BK334	\$16.70
Antenna Impedance Matching - ARRL - 1989	BX257	\$27.00	Morse Tutor 5.25 inch IBM Disk	BK187	\$16.70
Antenna Note Book W1FB - ARRL - 1967	BK179	\$18.00			
Antenna Pattern Worksheets PM of 10 - ARRL	BK211	\$5.40	<b>OPERATING</b>		
Antennas 2nd ed John Kraus - 1989	BK250	\$93.60	Amateur Radio Awards Book - RSGB	BK297	\$27.00
Beam Antenna Handbook - New Ed. 1990 Orl	BK215	\$23.00	KXG Companions	BK345	\$18.00
Critical Quad Antennas - Orl	BK214	\$15.20	Low Band DXing - John Devereaux	BK196	\$10.80
HF Antennas - Maxwell RSGB - 1988	BK188	\$27.00	Multiband Local and Alas - ARRL	BK197	\$9.00
Novice Antenna Notebook DeMaw - ARRL	BK182	\$14.40	Operating Manual - ARRL - 1990 3rd Edition	BK192	\$27.00
Practical Wire Antennas - RSGB	BK296	\$25.20	Operating Manual - RSGB - 1985 3rd Edition	BK359	\$25.20
Reflections - Software 5in disk	BK358	\$18.00	Passport to World Band Radio 1991	BK346	\$30.60
Reflections - Transmission Lines The Book - ARRL - 1990	BK348	\$36.00	Prefix Map - The World Map on Heavy Paper	BK335	\$14.40
Simple Low Cost Wire Antennas	BK218	\$23.00	Prefix Map of North America	BK235	\$7.20
Smith Chart Expanded Scale PK of 10	BK303	\$5.90	Prefix Map of the World	BK234	\$7.20
Smith Charts S/Scale 1 Set co-ord Imp/Adm Pack of 10	BK300	\$6.10	Radio Amateurs World Map	BK236	\$7.20
Smith Charts Stand Scale 1 SET Co-ord PK of 10	BK301	\$5.90	Short Wave Propagation Handbook	BK268	\$16.70
The Antenna Handbook - ARRL 1991 edition	BK370	\$36.00	The Complete DXer - Bob Locher - 1989	BK194	\$18.00
The Truth About CB Antennas - Orl	BK219	\$23.00	Transmitter Tuning - TAB - 1987	BK222	\$32.40
Transmission Line Transformers - ARRL 2nd edition	BK329	\$36.00			
Vertical Antenna Handbook - Law - 1990	BK294	\$16.70	<b>PACKET RADIO BOOKS</b>		
Vertical Antennas - Orl - 1988	BK220	\$21.10	AX.25 Link Layer Protocol - ARRL	BK178	\$14.40
VHF Antenna Design - ARRL - 1986	BK184	\$27.00	Computer Networking Con (Packet) No 5 1987 - ARRL	BK167	\$18.00
			Computer Networking Con (Packet) No 6 1987 - ARRL	BK188	\$18.00
<b>ATV BOOKS</b>			Computer Networking Con (Packet) No 7 1988 - ARRL	BK184	\$22.50
The ATV Compendium - BATC	BK270	\$14.20	Computer Networking Con (Packet) No 8 1989 - ARRL	BK295	\$21.60
The Best Of CO-TV - BATC	BK273	\$15.80	Computer Networking Con (Packet) No 9 1990 - ARRL	BK360	\$21.60
			Computer Networking Con (Packet) 1-4 1980/5	BK186	\$32.40
<b>CALL BOOKS</b>			Gateway to Packet Radio 2nd edition - ARRL	BK189	\$21.60
Radio Call Book International	BK339	\$57.80	Packet Radio Made Easy - Rogers	MFJ32	\$18.50
Radio Call Book North America	BK338	\$57.80	Packet Users Notebook - Rogers	BK285	\$16.70
<b>FICTION</b>			<b>SATELLITE BOOKS</b>		
CO Songs Danger - ARRL	BK296	\$9.40	Oscar Satellite Review - Ingram	MFJ31	\$15.80
CO Ghost Ship - ARRL	BK294	\$9.40	Satellite AMSAT-NA 5th Symposium 1987 - ARRL	BK182	\$15.80
Dead Valley OTH - ARRL	BK295	\$9.40	Satellite AMSAT-NA 6th Symposium - ARRL	BK189	\$15.80
Grand Canyon QSO - ARRL	BK297	\$9.40	Satellite Anthology - ARRL	BK180	\$14.40
Murder By QRM - ARRL	BK298	\$9.40	Satellite Experimenters Handbook 1990 edition	BK177	\$36.00
SOS At Midnight - ARRL	BK299	\$9.40	Space Almanac - ARRL - 1990	BK299	\$36.00
			Weather Satellite Handbook - ARRL	BK254	\$36.00
			Weather Satellite Handbook Software only - ARRL	BK326	\$18.00
<b>HANDBOOKS</b>					
ARRL Handbook - 1991	BK337	\$47.50	<b>VHF/UHF/MICROWAVE</b>		
ARRL Handbook - 1992	BK369	\$47.50	All About VHF Amateur Radio - Orl - 1988	BK216	\$23.00
Electronics Data Book - ARRL - 1988	BK201	\$21.60	Microwave Handbook Vol 1 - RSGB - 1989	BK318	\$63.00
Motorola RF Device Data - 2 Volumes	BK347	\$22.10	Microwave Update Con. 1987 - ARRL	BK174	\$14.40
Radio Communication Handbook - RSGB	BK286	\$52.40	Microwave Update Con. 1988 - ARRL	BK183	\$15.80
Radio Data Reference Book - RSGB - 1985	BK185	\$32.40	Microwave Update Con. 1989 - ARRL	BK321	\$21.60
Radio Handbook 23rd edition - Bill Orl	BK224	\$53.90	Mid Atlantic VHF Con. October 1987 - ARRL	BK175	\$15.80
Radio Theory For Amateur Operators - Swainston - 1991	BK265	\$38.70	Spread Spectrum Source Book - ARRL - 1991	BK365	\$36.00
			VHF Compendium Part 1 & 2 Vol 1	BK250	\$67.50
<b>HISTORY</b>			UHF Compendium Part 1 & 2 Vol 2	BK251	\$67.50
200 Meters and Down 1936 - ARRL	BK198	\$7.20	UHF Compendium Part 3 & 4 Vol 2	BK354	\$50.20
50 Years of the ARRL - 1981	BK196	\$7.20	UHF/Microwave Experimenters Manual - ARRL - 1990	BK325	\$40.50
Big Ear - Autobiography Of John Kraus WJUK - 1978	BK283	\$11.30	UHF/Microwave Experimenters Software 5 inch Disk - ARRL	BK327	\$18.00
Golden Classics of Yesterday - Ingram	MFJ30	\$15.50	VHF 21st Central States Con. 1987 - ARRL	BK172	\$15.80
Spark to Space - ARRL 75th Anniversary - 1990	BK110	\$36.00	VHF 22nd Central States Con. 1988 - ARRL	BK173	\$15.80
			VHF 23rd Central States Con. 1989 - ARRL	BK286	\$15.80
<b>INTERFERENCE BOOKS</b>			VHF 24th Central States Con. 1990 - ARRL	BK322	\$21.60
Interference Handbook - Nelson - 1969	BK181	\$23.00	VHF/UHF/MICROWAVE	BK267	\$43.20
Radio Frequency Interference - ARRL	BK186	\$8.60			
			<b>WIA MEMBERS SUMORIES</b>		
<b>MISCELLANEOUS</b>			Log Book Covers		\$16.00
Amidon Ferrite Complete Data Book	BK044	\$5.90	WIA Badge - Diamond		\$4.00
Design Notebook W1FB - ARRL	BK357	\$18.00	WIA Badge - Diamond With Call Sign Space		\$4.00
Help For New Hams DeMaw - ARRL	BK308	\$18.00	WIA Badge - Traditional Blue		\$4.00
Hints and Kinks 12th edition - ARRL	BK330	\$14.40	WIA Badge - Traditional Red		\$4.00
Novice Notes, The Book - ARRL QST	BK290	\$10.80	WIA Car Window Stickers		\$0.50
QRP Classics - ARRL QST	BK323	\$21.60	WIA Tape - Sounds of Amateur Radio		\$7.00
QRP Note Book - DeMaw ARRL	BK170	\$10.80			
Radio Astronomy 2nd edition - John D Kraus	BK262	\$71.90	<b>WIA PUBLICATIONS</b>		
Shortwave Receivers Past and Present	BK253	\$16.80	Australian Radio Amateur Call Book - 1992		\$10.00
Solid State Design - DeMaw ARRL	BK171	\$21.60	Band Plans Booklet		\$2.80
			WIA Log Book - Horizontal or Vertical Format		\$5.00
<b>MORSE CODE</b>			WIA Novice Study Guide		\$1.50
Advanced Morse Tutor - 3.5 inch Disk	BK328	\$36.00			
Advanced Morse Tutor - 5.25 inch Disk	BK328	\$36.00			
Morse Code 2 Tapes Novice Code Course - Gordon West	BK228	\$17.90			
Morse Code 8 Tapes 13-20 WPM Code Course - Gordon West	BK231	\$63.90			
Morse Code 8 Tapes 5-13 WPM Code Course - Gordon West	BK230	\$63.90			
Morse Code 8 Tapes Novice Code Course - Gordon West	BK229	\$63.90			

Not all items above are available from all Divisions (and none is available from the Executive Office).

If the item is carried by your Divisional Bookshop, but is not in stock, your order will be taken and filled as soon as practicable.

All prices are for WIA members only - postage and packing, if applicable, is extra.

All orders must be accompanied by a remittance.



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